CALIFORNIA PUBLIC UTILITIES COMMISSION
Safety and Enforcement Division
Electric Safety and Reliability Branch

Incident Investigation Report

Report Date: May 6, 2019

Incident Number: E20171020-06

Utility: Pacific Gas and Electric Company (PG&E)

Date and Time of the Incident: October 8, 2017, 2234 hours

Location of the Incident: 13916 Cascade Way
Browns Valley, CA
County: Yuba

Fatality / Injury: Four fatalities

Property Damage: $3,000,000 (PG&E restoration costs)

Utility Facilities Involved: Bangor 1101, 12 kV Circuit

Violation: Yes

I. Summary

On October 8, 2017, at approximately 2234 hours, two PG&E 12-kV overhead conductors contacted each other and ignited the “Cascade Fire”, at 13916 Cascade Way in the city of Browns Valley in Yuba County. The Cascade Fire burned 9,989 acres of land, destroyed 264 structures, damaged 10 structures, and resulted in four fatalities. The Cascade Fire is part of the Wind Complex, which consists of four different fires: Cascade, La Porte, Lobo, and McCourtney.

SED’s investigation found that two PG&E 12-kV overhead conductors contacted each other and created an electrical arc which caused the ignition of the fire.

Based on SED's review, SED found that PG&E violated the Commission's General Order (GO) 95, Rule 38:

GO Rule	Violation(s)
GO 95, Rule 38	Conductor clearance not maintained

A. Rules Violated

GO 95, Rule 38 Minimum Clearances of Wires from Other Wires, states in part:

"The minimum vertical, horizontal or radial clearances of wires from other wires shall not be less than the values given in Table 2 and are based on a temperature of 60°F and no wind.

The minimum value allowed between two 12-kV conductors on the same crossarm is 6 inches per Table 2, Case 17E."

B. Witness(es)

No.	Name	Title
1	Ivan Garcia	CPUC Lead Investigator
2	Brandon Vazquez	CPUC Investigator
3	Mike Rufenacht	Battalion Chief, California Department of Forestry and Fire Protection (CAL FIRE)
4	Charles Filmer	PG&E, CPUC Reporting
5	[redacted]	PG&E Supervisor Vegetation Management, North Valley
6	John Dailey	PG&E Law Claims
7	[redacted]	Exponent Failure Analysis
8	Chris Sieglock	Sieglock Law
9	Jonathon Joannides	Wilson Sanghi Goodrich and Rosati Law
10	Kristen Riano	Wilson Sanghi Goodrich and Rosati Law

C. Evidence

No.	Source	Description
1	PG&E	Initial Online Incident Report, 10/20/17
2	CPUC	Field visit report and Photos, 10/26/17
3	CPUC	Field visit report and Photos, 4/20/18
3	PG&E	20-day Incident Report*, EI171008O, 11/17/17*
4	CPUC	Data Request #1, 11/21/17
5	PG&E	Data Request Response #1, 12/29/17 through 6/29/18
6	CPUC	PG&E Evidence Inspection, 6/11/18
7	CPUC	Data Request #2,7/19/18
8	PG&E	Data Request Response #2, 8/3/18 through 9/21/18
9	CPUC	Data Request #3, 8/16/18
10	PG&E	Data Request Response #3, 8/31/18 through 9/21/18
11	CALFIRE	Fire Report 17-CA-NEU-026269, 10/9/18
12	CPUC	CAL FIRE Evidence Viewing Photos, 10/9/18
13	CPUC	Data Request #4, 10/19/18
14	PG&E	Data Request Response #4, 11/15/18 through 12/14/18
15	CPUC	Data Request #5, 1/3/19
16	PG&E	Data Request Response #5, 1/25/19 through 2/6/19
17	CPUC	Data Request #6, 2/8/19
18	PG&E	Data Request Response #6, 2/15/19 through 3/15/19
19	CPUC	Data Request #7, 2/25/19
20	PG&E	Data Request #7 Response, 3/18/19

II. Background

On January 17, 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency and directed state officials to take actions to mitigate conditions that could result from the drought and cause a fire. On February 18, 2014, in response to the proclamation, SED issued a letter to PG&E directing PG&E to take all practicable measures to reduce the likelihood of fires caused by utility facilities, including, increasing inspections, taking corrective actions and modifying protective schemes. On June 12, 2014, the California Public Utilities Commission (CPUC) issued Resolution ESRB-4 directing all Investor Owned Electric Utilities (IOU) to take remedial measures to reduce the likelihood of fires started by or threatening utility facilities. On October 30, 2015, Governor Edmund G. Brown Jr. declared a Tree Mortality State of Emergency due to tree mortality caused by the state's prolonged drought and bark beetle infestations.

On October 8, 2017 at approximately 2303 hours, a vegetation fire occurred near 13916 Cascade Way in Brown's Valley. The fire affected PG&E's Bangor 1101, 12 kV circuit and customer-owned electric equipment. The Cascade Fire burned 9,989 acres of land, destroyed 264 residences and outbuildings, and resulted in four fatalities. The Cascade Fire is part of the

Wind Complex, which consists of four different fires: Cascade, La Porte, Lobo, and McCourtney.

The closest remote automated weather station is Bangor RAWS located at 5895 LaPorte Road approximately four miles from the vegetation fire address. The wind gusts recorded at the initial time of the fire were at 29 miles per hour (mph).

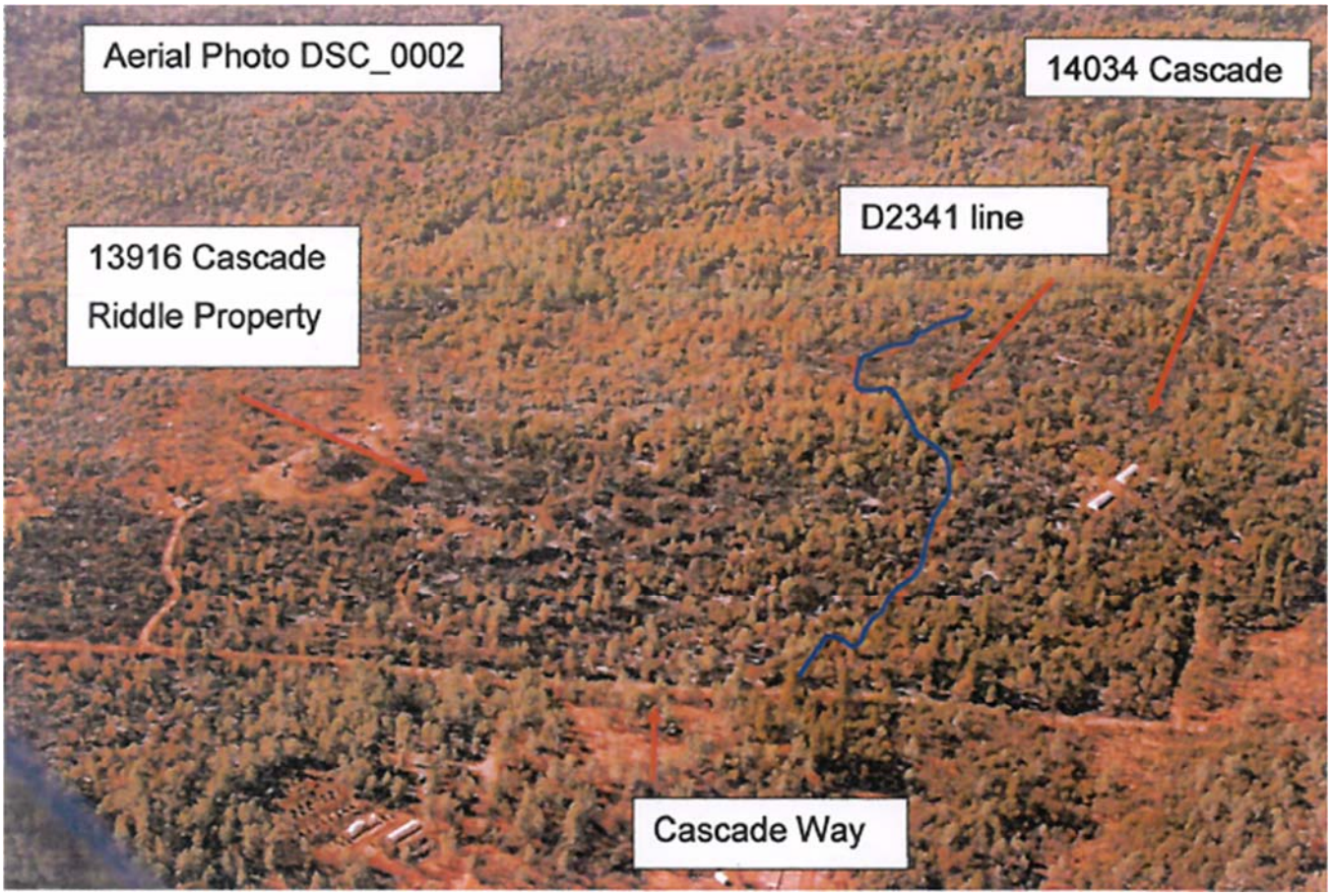

Figure 1. Aerial View of the Cascade Fire (Source: CAL FIRE)

III. SED Review and Analysis

A. PG&E's Distribution Facilities Inspection Program

i. Overhead Patrols and Detailed Inspections

General Order 165 requires biennial patrol inspections and detailed inspections at five-year intervals for rural areas, such as the incident location. Rural areas are defined by GO 165 as "those areas with a population of less than 1,000 persons per square mile".

GO 165 defines a patrol inspection as a "simple visual inspection" meant to identify "obvious" problems and hazards and may be carried out in the course of other company business. GO 165 defines a detailed inspection as one where facilities are "carefully examined" to gather and record conditions of overhead facilities.

For the incident area, SED reviewed PG&E's 2015[1] and 2017[2] distribution patrol inspection and PG&E's 2009[3] and 2014[4] detailed inspection documentation. As a result of the patrol inspections, no conditions or issues were documented. PG&E performed its 2017 patrol inspection of the incident area on September 22, 2017, which was just 16 days prior to the start of the Cascade Fire on October 8, 2017.

For the 2009 detailed inspection, PG&E found no abnormal conditions. PG&E also stated that there were no abnormal conditions found in the 2014 detail inspection. However, PG&E did identify five items of minor work that were completed. According to PG&E's 2016 Electric Distribution Preventive Maintenance (EDPM) Manual, minor work is defined as maintenance work and/or repair activities that can be accomplished safely and efficiently at the site of the electric distribution facility by the Compliance Inspector. The five minor work items identified included work on four guys (adjust, repair, trim) and removal of one third party sign. These completed repairs were done on various poles near the incident area but not at the subject poles.

ii. Intrusive Pole Inspection

SED review PG&E intrusive inspections for the subject poles. An intrusive inspection is the act of drilling a hole in the pole and using an approved shell thickness gauge to determine the internal condition of the pole. The two poles that held the two 12-kV conductors were PG&E poles #101288638 and #101288646.

The first pole, #101288638, was a Douglas Fir tree, Class 4, 45-foot pole manufactured in 1979, and installed in 1980. The intrusive inspection was conducted on October 22, 2007.[5] The pole passed the intrusive inspection and had a circumference of 37 inches.

The second pole, #101288646, was a Western Ponderosa Pine tree, Class 4, 40-foot pole manufactured in 1979 and installed in 1980. The intrusive inspection was conducted on October 22, 2007.[6] The pole passed the intrusive inspection and had a circumference of 39 inches.

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[1] Bates PGE-CPUC_00008157

[2] Bates PGE-CPUC_00008152

[3] Bates PGE-CPUC_00008158-00008159

[4] Bates PGE-CPUC_00008144-00008145

[5] Bates PGE-CPUC_00006210

[6] Bates PGE-CPUC_00006212

B. PG&E's Vegetation Management Program

There was no overhead vegetation involved at the Cascade incident cite, but SED did review vegetation management records that PG&E provided in its data responses.
SED reviewed PG&E's vegetation management documentation for the previous five years prior to this incident. Although vegetation was not involved in the Cascade Fire, SED reviewed the documented inspections and accompanying vegetation work orders. PG&E performed vegetation management activities on the Bangor 1101, 12 kV circuit at 13916 Cascade Way in 2013, 2014, 2015, 2016, and on September 30, 2017.

There are three trees identified for vegetation management activities at this address. They are two Blue Oak trees and one Gray Pine tree. SED did not find any issues with the vegetation management records for these three trees. They were inspected annually and had routine trims completed.

C. PG&E's Infrastructure Conditions

The two subject conductors involved in the incident were insulated, size 4 American Wire Gauge (AWG), Aluminum Conductor, Steel Reinforced (ACSR) and were part of PG&E's Bangor 1101 12 kV circuit. They spanned approximately 102 feet, seven inches between poles, and were installed in 1980. The northernmost pole has a 25-kVA transformer installed which services to a customer owned pole, and then to the home at 13916 Cascade Way. The next pole to the south is where the main line circuit runs through. The picture in Figure 2 below shows the two sagging subject conductors facing north as found by CAL FIRE on October 9, 2017.

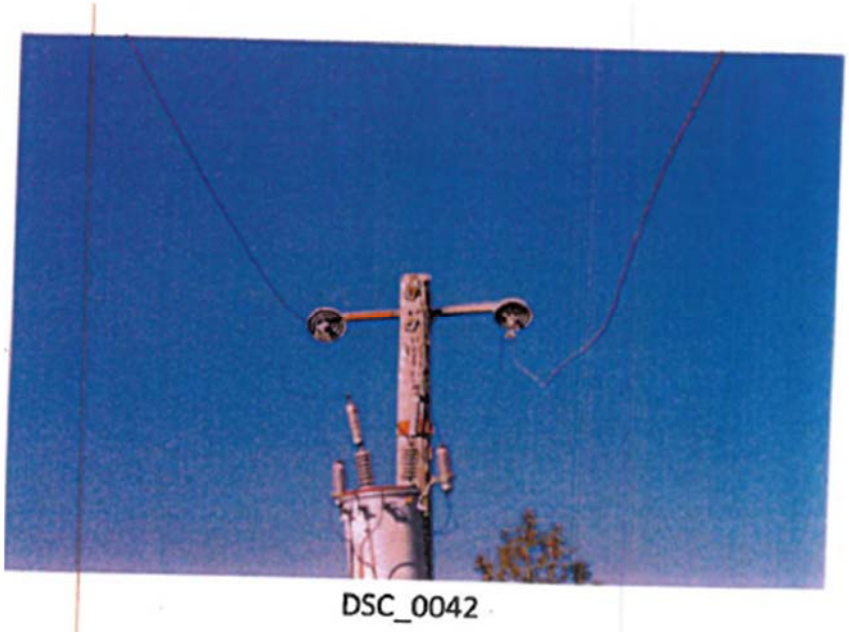

Figure 2. Northern Subject Transformer Pole and Sagging Conductors (Source: CALFIRE)

On October 26, 2017 at approximately 1420 hours, SED met with PG&E's Charles Filmer and [redacted] at 13916 Cascade Way in Browns Valley. SED was escorted by PG&E through a locked gate to the incident scene. At the scene, [redacted] stated that CAL FIRE had sectioned off two poles and had taken the two primary conductors between the two poles for evidence. In addition, he stated CAL FIRE took a service drop to a customer owned pole and the service panel to that home for possible power theft.

SED walked the primary main line starting from the south pole at the incident site and did not see any clearance issues with the trees or vegetation. SED observed the northern transformer pole, for which the two primary conductors were missing. (Figure 3)

SED observed that there was no vegetation near where the conductor span was taken by CALFIRE. (Figure 4) SED believes that this fire was not vegetation related.

SED observed that the customer owned pole had been burnt in the fire next to a mobile home. The area was full of old cars and car debris that were believed to have once been a collection of the homeowner. [redacted] mentioned that the owner of the property had passed away about a year ago and that he did not know who was living there at the time of the incident.

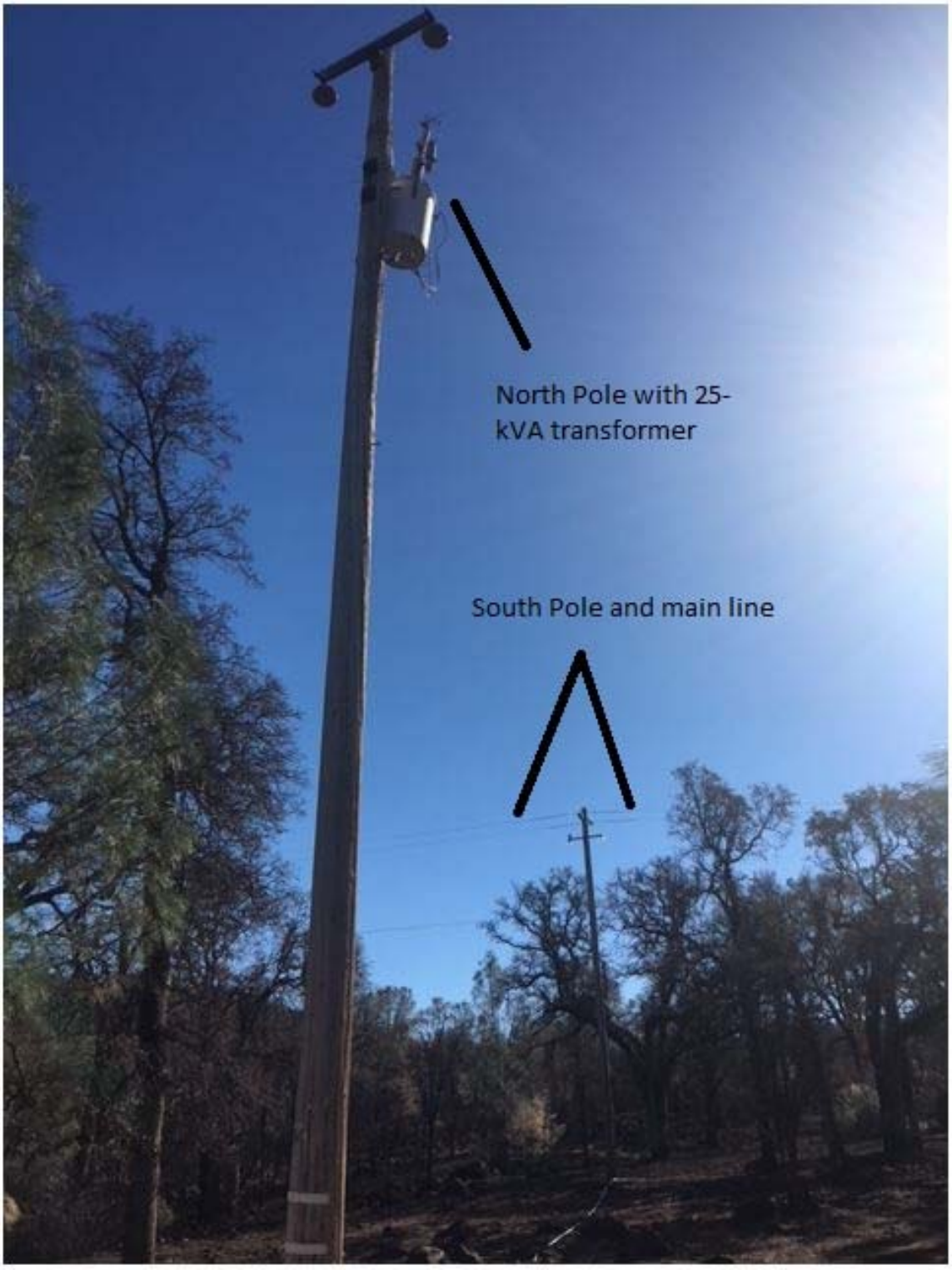

Figure 3. North and South Poles at 13916 Cascade Way, with two primary conductors missing.

Figure 4. The two subject poles cleared of vegetation.

On November 10, 2017, at approximately 0900 hours, SED met with PG&E's Law Claims representative, Jon Dailey, for an evidence collection at the site of the Cascade Fire. PG&E took down a 25-kVA transformer and removed a 40-foot, Class 4 wooden pole for evidence. (Figure 5). After the transformer was brought down, SED did a visual inspection and found no oil leaks or excessive corrosion on it. (Figure 6)

The wooden pole was cut into six pieces for loading onto a truck. The pole bottom was measured at approximately 5 feet deep, which would put the height of the pole at about 35 feet at the time of the incident. The pole had a detailed test and treat decal with an inspection date

of 2007. SED observed the pole top did have some minor damage but nothing to suggest it was hollow or rotten on the inside.

Mr. Dailey mentioned to SED that four connectors and two fuses were taken from the site for evidence by PG&E. The two fuses were taken from the transformer pole. These fuses were not blown. Two connectors from the transformer pole and two connectors from the southern pole on the main line were also collected for evidence.

Mr. Dailey also stated that the 25-kVA transformer and the transformer pole would be taken and stored at Mayle Iron Mountain Facility at 1350 West Grand Ave. in Oakland.

Figure 5. The subject 40-foot, Class 4 wooden pole.

Figure 6. The subject 25-kVA transformer.

SED also investigated the burned area where the customer pole was and observed a green extension cord which connected to the trailer that burned down. The green extension cord looked like it may have been connected to the service panel. Per PG&E, the service panel was gone and had already been collected by CAL FIRE.

PG&E informed SED of another evidence collection at 14034 Cascade Way in Brown's Valley. This location was on the same circuit, Bangor 1101 12-kV as the first location at 13916 Cascade Way in Browns Valley. The two locations are separated by approximately 0.3 mile. On April 20, 2018, at approximately 0900 hours, SED met with PG&E's Law Claims representative Jon Dailey for an evidence collection at this site. SED also met with attorneys and fire investigators for PG&E and for victims of the Cascade Fire.

SED observed PG&E take down a customer pole measured at about 25 feet and 1 ½ inches in length. PG&E lineman cut the jumpers from the transformer pole and isolated the customer pole for removal.

After PG&E removed the customer pole, they pieced out the pole into four sections and loaded them on a truck for collection. They also removed and collected the Smart Meter for the 14034 Cascade Way address, a burnt dryer, and wiring left from the burned debris.

SED noticed what seemed to be burnt washer and dryer equipment in a burned down washroom. PG&E's Fire Investigator, [redacted] of Exponent Failure Analysis was conducting his investigation and took several pictures of the scene and of the evidence that was being removed.

The customer's service pole powered a washroom. SED also noticed a customer made underground cable that extended a few hundred feet up a hill to a power pedestal that seemed to service at least two rooms for growing crops. The underground cable was not PG&E's and looked like an illegal installation.

SED could not determine whether the customer's Smart Meter was tampered with. PG&E collected all the evidence to investigate if the customer equipment was involved in the Cascade Fire.

Mr. Dailey stated that the evidence taken at 14034 Cascade Way, Browns Valley on April 20, 2018 would be taken and stored at Mayle Iron Mountain Facility at [redacted]

SED has asked PG&E in data requests to provide its investigation reports for both 13916 Cascade Way and 14034 Cascade Way evidence collection locations. PG&E has refused to provide its investigation reports by stating, "PG&E is investigating the incident location, including retaining experts, in preparation for litigation. At this time, this investigation, including the work performed by those experts, is privileged."[7]

D. PG&E's Equipment Operations and Maintenance

SED investigated compliance with GO 95, Rule 31.1 during their review of PG&E distribution equipment operations and maintenance records for the protection devices below.

[7] Bates PGE-CPUC_DR-081618_Cascade1_Q03

Figure 7. Diagram showing the configuration of protection devices upstream of incident span/Area of Interest at the time of the incident. Not drawn to scale. (Source: PG&E)[8]

The incident span was protected by fuse 17841, immediately upstream. As one progresses upstream from fuse 17841, four other protection devices are in place before the final source Bangor-1101 Circuit Breaker (CB):

1. Fuse 5211
2. Line Recloser (LR) 7446
3. LR 1806
4. LR 31502
5. Bangor-1101 CB

Fuse 17841, located at the branch from the main circuit line near the intersection of Cascade Way and Neptune Road, consists of 10 Amp fuses for each of the conductors.

[8] Bates number 2018.05.18 Amendment CPUC Cascade Factual Report.

Figure 8. Map showing the approximate locations of protection devices upstream of incident span/Area of Interest. Not drawn to scale. (Source: PG&E)[9]

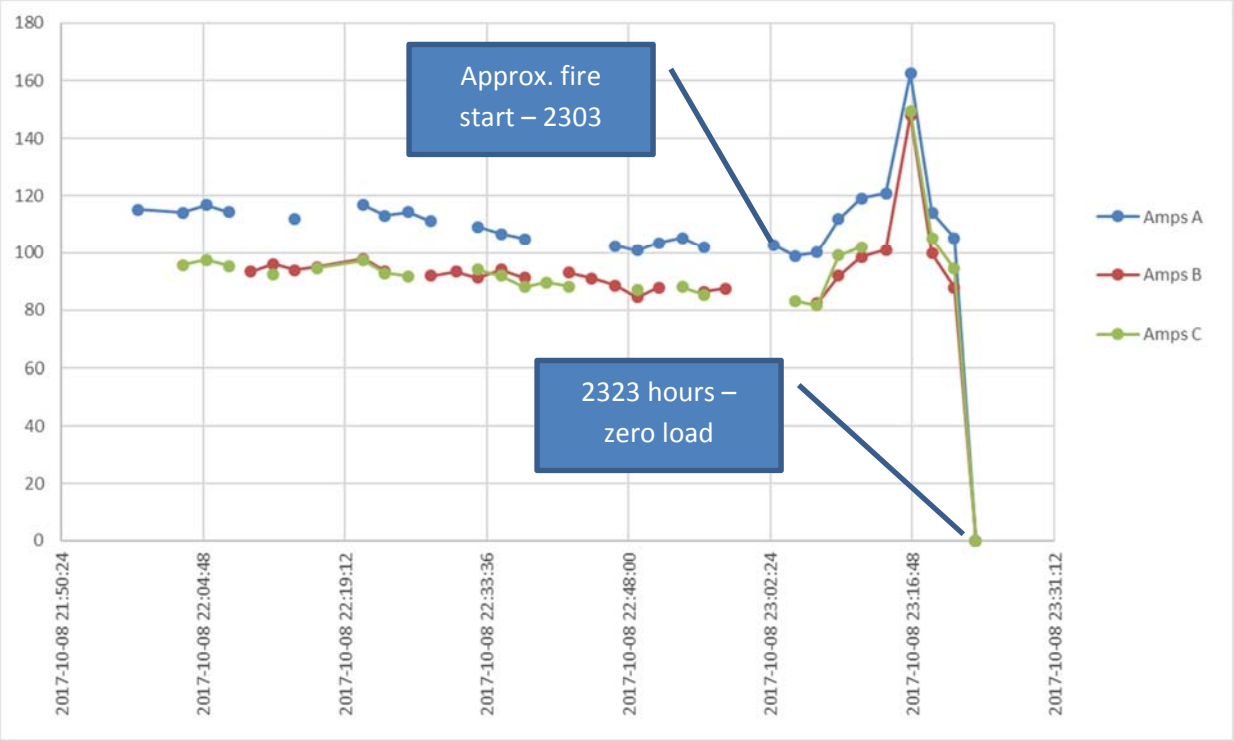

Figure 9. SCADA plot of load data recorded at Bangor-1101 CB on October 8, 2017 from 2158 hours to 2323 hours.

i. Event Timeline

The Bangor substation was energized until PG&E's Colgate-Palermo 60kV circuit, feeding power to the substation, was automatically de-energized due to a fire impacting the Colgate-Palermo circuit at approximately 2322 hours. While the Bangor-1101 circuit was energized, LR-1806, LR-31502 and the Bangor CB-1101 had data recording capability prior to and for a limited duration of the fire. SED reviewed the Supervisory Control and Data Acquisition (SCADA) load and event data recorded at the equipment listed above for October 8, 2017. Although LR-7446 was the closest device, it did not have SCADA capability so SED compared readings from LR-1806. SED compared SCADA events and load readings from the LRs with SCADA capability to data recorded at the source Bangor CB-1101.

October 8, 2017
2154 hours – LR-31502 reports above minimum-to-trip alarm.[10]

[9] Bates number PGE-CPUC_00023061_CONFIDENTIAL Cascade. PGE-CPUC_00017477_CircuitMap_AU114-M_24x36_500_CONFIDENTIAL. PGE-CPUC_00017356_CircuitMap_AT114-p_24x36_500_CONFIDENTIAL.

[10] Bates PGE-CPUC_00007881.

2258 hours – LR-31502 reports above minimum-to-trip alarm.[11]

2200 hours – PG&E smart meter downstream of fuse 5211 records zero volts.[12]

2257 hours

- 9 of 13 Smart Meters downstream of fuse 17841 record a power failure.[13] According to PG&E, this is an inferred time stamp.[14]
- 21 of 25 Smart Meters downstream of fuse 5211, but not downstream of fuse 17841, recorded a power down event.[15] According to PG&E, the Smart Meter events for the 21 Smart Meters were also inferred time stamps.[16]
- LR-1806 and LR-31502 report above minimum-to-trip alarms.[17]

2300 hours – Approximate fire ignition time. Yuba Sheriff dispatch receives call about the Cascade fire from 13852 Cascade Way.[18]

2308 hours – A momentary outage occurred at Bangor substation.[19]

2309 hours – A reverse power flow is detected at LR-31502. Also, SCADA at the LR reports phase A is energized while phase C reports offline.[20]

2316– 2322 hours – Colgate-Palermo 60kV transmission line feeding Bangor substation experiences 3 additional momentary outages during this time frame (2316, 2318, and 2320 hours) and automatically de-energized at 2322 hours.[21]

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[11] Id.

[12] Bates 2018.05.18 Amendment CPUC Cascade Factual Report and PGE-CPUC_DR-10192018_Cascade_Q03.

[13] Bates PGE-CPUC_DR-10192018_Cascade_Q05 and PGE-CPUC_00023044.

[14] Bates PGE-CPUC_DR-10192018_Cascade_Q05. Internal clocks are reset and may result in accurate timestamps on some events.

[15] Bates Cascade Supplement 12-31, PGE-CPUC_DR-10192018_Cascade_Q06 and PGE-CPUC_00023046.

[16] PGE-CPUC_DR-10192018_Cascade_Q06. Internal clocks are reset and may result in accurate timestamps on some events.

[17] Bates Cascade Supplement 12-31, PGE-CF_00137638, PGE-CF_00137639 and PGE-CPUC_00007881.

[18] Bates Cascade Supplement 12-31.

[19] Bates PGE-CPUC_00013569_CONFIDENTIAL.

[20] Bates PGE-CPUC_00007881.

[21] Bates PGE-CPUC_00013569_CONFIDENTIAL.

2323 hours – All phases reported offline by SCADA at LR-31502.[22]

October 9, 2017
1930 hours – PG&E manually opened LR-31502 while the circuit was de-energized.[23]

1958 hours – PG&E re-energized Bangor substation but LR-31502 remained open.[24]

October 12, 2017
1258 hours – PG&E troubleman reported fuse 5211 open.[25]

October 13, 2017
1314 hours – PG&E manually closed LR-7446 on a de-energized line. Unable to determine when it opened.[26]

1934 hours – PG&E troubleman reported fuse 17841 open.[27]

October 17, 2017
After CAL FIRE retained evidence at the incident location and cleared the site, PG&E measured the conductor span length to be approximately 100 ft. PG&E observed damage midspan on the secondary service conductor.

End of Timeline

Prior to the fire, PG&E set LR-7446 to trip open for a ground fault above 100 Amps and for a phase fault above 200 Amps.[28] A PG&E troubleman found the device open so a fault large enough automatically opened the device since no other records show a manual operation of the device. The fact that the device was open means that two conductors contacting may have caused a phase to phase fault large enough to trip open the device. Also, reverse power flow was detected at LR-31502 which further supports that there was contact between energized conductors. Since no vegetation or facility failures occurred on the span, it is likely that the phase to phase fault caused the device to open and deposited molten metal found on the ground.

Based on the SCADA records and Smart Meter data reviewed, SED did not identify a violation regarding PG&E's distribution equipment operations and maintenance.

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[22] Bates PGE-CPUC_00007881.

[23] Bates 2018.05.18 Amendment CPUC Cascade Factual Report and PGE-CPUC_00013769_CONFIDENTIAL.

[24] Id.

[25] Bates 2018.05.18 Amendment CPUC Cascade Factual Report and PGE-CPUC_00013670_CONFIDENTIAL.

[26] Bates 2018.05.18 Amendment CPUC Cascade Factual Report and PGE-CPUC_00013542_CONFIDENTIAL.

[27] Bates 2018.05.18 Amendment CPUC Cascade Factual Report and PGE-CPUC_00013552_CONFIDENTIAL.

[28] PGE-CPUC_00024128.

E. Other Field Observations and Review of Physical Evidence

On October 9, 2018, SED met with CAL FIRE Battalion Chief Mike Rufenacht in Auburn to view the evidence CAL FIRE kept from the Cascade Fire. Chief Rufenacht stated the two conductors between the two subject poles at the 13916 Cascade Way address were found sagging and that they contacted each other during the wind event. The fire pattern underneath the north and south utility poles at this location showed advancing fire indicators going away from the area below the conductors in the dead and dry grasses. CAL FIRE identified this location as the Specific Origin Area (SOA). The SOA contains the ignition area and the initial stages of the fire.

On October 17, 2017, Chief Rufenacht asked PG&E to remove the two 12-kV conductors from the two poles. PG&E cut down the conductors and CAL FIRE rolled the conductors together as they were lowered down. The conductors did not touch the ground as they were lowered, and CAL FIRE placed plastic bubble wrap to protect the area in which there appeared to be damage to each conductor. Chief Rufenacht commented that it was hard to see any damage or burn marks on the conductors with the naked eye and that he had used binoculars to see the markings.

SED did not know that the conductors were sagging and had contacted each other during the wind event until this meeting with CAL FIRE took place. SED had focused its investigation on the customer pole and facilities that were left at the incident site on 13916 Cascade Way as the possible cause of the Cascade Fire. SED also was investigating for the cause of the fire at the 14034 Cascade Way address from which PG&E had collected evidence of another customer's facilities which included a Smart Meter, dryer, and wiring at the home on April 18, 2018.

SED took pictures of the burnt east and west conductors at CAL FIRE's Auburn Fire Station. The burn marks on each conductor are evident of a contact. (Figure 7, Figure 8) Chief Rufenacht stated the contact occurred at about half distance between the poles, which would have been an approximate distance of 51 feet from each pole.

SED asked CAL FIRE about the 14034 Cascade Way location and if it was related to the cause of the Cascade Fire. Chief Rufenacht stated that the fire at this area was from a controlled burn. A dozer, Dozer 2341 (Figure 1) was used just north of this location and a CAL FIRE crew put fire on the ground to improve the fire line. A dozer line is constructed by blading the ground. The blades remove flammable plant material down to bare soil. The fire happened to reach the customer's facilities at 14034 Cascade Way, but the customer's facilities were not the cause of the Cascade Fire.

Figure 10. East conductor with burn mark.

Figure 11. West conductor with burn mark.

IV. CAL FIRE Investigation

CAL FIRE's investigation report, 17CANEU026269 determined that the cause of the Cascade Fire was due to line sag during the October 8, 2017 wind event. The report concludes, *"Based on my knowledge, training, and experience, 911 audio, witness statements, and evidence from the Cascade Fire, I believe the cause of the Cascade Fire was due to line sag during the October 8, 2017 wind event. The wind in conjunction with the line sag on the two-conductors located on the property at 13916 Cascade Way made contact creating an electrical arc. The electrical arc deposited hot burning or molten material on the ground in a receptive fuel bed causing the fire."*

In addition, CAL FIRE references a report done by Jim Nolt, Electrical Mechanical and Corrosion Engineer of JH Nolt and Associates. Mr. Nolt's report concludes that the most probable source of ignition was the electric arcing that was occurring on the conductors between the two utility poles indicated. Both the concurrent wind event and the excessive slack in the high-voltage distribution conductors contributed to the likelihood of this cause. The evidence of recent arcing on the two conductors confirms unauthorized contact between conductors.

V. Conclusion

Based on the evidence that SED reviewed, SED found the following:

- PG&E violated GO 95, Rule 38 by not maintaining the minimum distance of 6 inches between two 12-kV conductors on the same crossarm, which eventually contacted each other.

If SED becomes aware of additional information that could modify SED's findings in this Incident Investigation Report, SED may re-open the investigation and may modify this report or take further actions as appropriate.

VI. Attachments

Attachment A – CAL FIRE Investigation Report – Incident No. 17CANEU026269[29]

Attachment B – CAL FIRE Nolt Report[30]

Attachment C – PG&E Cascade Incident Description & Factual Summary[31]

[29] CAL FIRE Investigation Report – Incident No. 17CANEU026269.

[30] CAL FIRE Investigation Report – Incident No. 17CANEU026269. Attachment 17.

[31] 2018.05.18 Amendment CPUC Cascade Factual Report.

ATTACHMENT A

CAL FIRE Investigation Report

Case Number 17CANEU026269

CAL FIRE

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION
NEVADA-YUBA-PLACER UNIT
13760 Lincoln Way
Auburn, CA 95603

INVESTIGATION REPORT

INCIDENT NUMBER:	17-CA-NEU-026269
CASE NUMBER:	17-2320-122
CASE NAME:	CASCADE
DATE:	October 8, 2017
INCIDENT TYPE:	Wildland Fire
INCIDENT INVESTIGATORS:	Mike RUFENACHT, Battalion Chief – NEU Chris VAN COR, Division Chief –SAC Karen VILLALOBOS, Battalion Chief - SAC Jeremy MONROE, Deputy Chief– SAC

1 - VIOLATION:

None Observed

2 - SUMMARY:

On the morning of October 8th, 2017, the National Weather Service issued a Red Flag Warning for parts of Northern California including areas covered by the CAL FIRE Nevada Yuba Placer Unit. The National Weather Service predicted North and East winds 15 to 35 miles per hour with gusts 40 to 55 miles per hour with low humidity's and dry fuels. At 11:02 PM hours on Sunday October 8th, 2017, the Grass Valley Emergency Command Center (GVECC) received a report of a vegetation fire on Cascade Lane near Neptune Road. The initial report on conditions was 10-15 acres with an extreme rate of spread. At the initial time of the fire, the closest remote automated weather station (the Bangor RAWS weather station), was receiving wind gusts to 29 miles per hour. The Cascade Fire burned 9989 acres of land, destroyed 264 residences and outbuildings, and caused four civilian fatalities. The La Porte Fire started on the same day and north of the Cascade Fire in Butte County. The La Porte Fire burned 6151 acres and eventually merged with the Cascade Fire. Together the two fires burned 16140 acres and were managed as the Wind Incident.

3 – SUBJECTS:

S-1 Pacific Gas and Electric Corporation (PG&E)
77 Beale Street
San Francisco, CA 94105

PG&E is the owner of the electrical utilities and power distribution lines serving the residence at 13916 Cascade Way, Brown's Valley, California 95918.

4 – VICTIMS, WITNESSES:

V-1 Jennifer JOHNSON

[redacted]

SEX: [redacted] HAIR: [redacted] EYES: [redacted]

HT: nkWT: [redacted] DOB: [redacted]

CDL: [redacted]

Cell Phone: [redacted]

Reported the Cascade Fire and her home was burned in the fire

V-2 Matthew JOHNSON

[redacted]

SEX: [redacted] HAIR: [redacted] EYES: [redacted]

HT: [redacted] WT: [redacted] DOB: [redacted]

RACE: [redacted]

CDL: [redacted]

Cell Phone: [redacted]

Husband of Jennifer JOHNSON

V-3 Greg DANILYAN

[redacted]

SEX: [redacted] HAIR: [redacted] EYES: [redacted]

HT: [redacted] WT: [redacted] DOB: [redacted]

RACE: [redacted]

CDL: [redacted]

Cell Phone: [redacted]

Lives on Cascade Way and drove down Cascade Way before the fire had burned onto his property. DANILYAN's home and property also burned in the fire.

V-4 Janice RIDDLE

[redacted]

SEX: [redacted] HAIR: [redacted] EYES: [redacted]

HT: [redacted] WT: [redacted] DOB: [redacted]

RACE: [redacted]

CDL: [redacted]

Home Phone: [redacted]

[redacted]

V-5 Stanley Albert COOLIDGE

[redacted]

SEX: [redacted] DOB: [redacted]

RACE: [redacted]

CDL: [redacted]

SSN: [redacted]

Stanley COOLIDGE and his fiancé Roseann HANNAH were reported missing and family members had last spoke with them via telephone as the fire was beginning to burn COOLIDGE's house. [redacted]

[redacted]

V-6 Roseann Marie HANNAH

[redacted]

SEX: [redacted] DOB: [redacted]

RACE: [redacted]

CDL: [redacted]

Stanley COOLIDGE and his fiancé Roseann HANNAH were reported missing and family members had last spoke with them via telephone as the fire was beginning to burn COOLIDGE's house. [redacted]

[redacted]

V-6 David Patrick CULP

[redacted]

SEX: [redacted] DOB: [redacted]

RACE: [redacted]

CDL: [redacted]

SSN: [redacted]

[redacted]

V-7 Sandra Lou PICCIANO

[redacted]

SEX: [redacted] DOB: [redacted]

RACE: [redacted]

CDL: [redacted]

As documented in the Yuba County Coroner's Report (Attachment 14), a witness observed PICCIANO's vehicle crash in a field on the morning hours of the Cascade Fire on October 9, 2017. The witness was unable to get her out of the vehicle due to it being engulfed in flames. [redacted]

WITNESSES:

W-1 Brent ROGERS
HFEO D2341- Heavy Fire Equipment Operator, CAL FIRE
NEU-13760 Lincoln Way
Auburn, CA 95603
Phone: (530) 889-0111
HFEO ROGERS cut direct line on North edge of fire as it came off Cascade Way

W-2 Mike RUFENACHT
Battalion Chief, CAL FIRE Nevada Yuba Placer Unit
13760 Lincoln Way,
Auburn, CA 95603
Cell Phone: [redacted]
Phone: (530) 889-0111
Lead Investigator

W-3 Chris VAN COR
Division Chief, CAL FIRE
PO Box 944246
Sacramento, CA 94244-2460
Cell Phone: [redacted]
Phone: 916) 653-5837
Investigator

W-4 Karen GOUGE
Battalion Chief, CAL FIRE
PO Box 944246
Sacramento, CA 94244-2460
Cell Phone: [redacted]
Phone: (916) 653-2195
Investigator

W-5 Jeremy MONROE
Assistant Chief, CAL FIRE
Sacramento, CA 94244-2460
Cell Phone: [redacted]
Investigator

W-6 Nathan BARCKLAY
Battalion Chief, CAL FIRE Amador El Dorado Unit
2840 Mt. Danaher Rd.
Camino, CA 95709
Cell Phone: [redacted]
Phone: (530) 647-5293

O-1 Jim NOLT
Electrical Mechanical and Corrosion Engineer, JH Nolt and Associates
107 Blue Canyon Way
Folsom, CA 95630-2003
Office Phone: (916) 988-2256
Engineer used on the Cascade

O-2 Ken ODOM
AT&T
PHONE (530)671-7202
AT&T crew member who helped cut and take AT&T lines (Evidence 5,6)

O-3 Rick LOPEZ
AT&T
PHONE (530)680-3892
AT&T crew member who helped cut and take AT&T lines (Evidence 5,6)

O-4 Frank STRICKFIELD
PG&E
PHONE (530)320-8298
PG&E crew member who helped cut and take the PG&E conductors (Evidence 7,8,9,)

O-5 David PATTERSON Jr.
PG&E
PHONE (530)693-0448
PG&E crew member who helped cut and take the PG&E conductors (Evidence 7,8,9,)

5 – EVIDENCE:

EVIDENCE 1- Weatherhead

EVIDENCE 2-Electrical main panel with meter

EVIDENCE 3-Electrical panel to 5th wheel trailer

EVIDENCE 4-Unknown glass or sap material found in origin area

EVIDENCE 5-Communication line from south utility pole to north utility pole

EVIDENCE 6-Communication line from north utility pole to drop pole near 5th wheel trailer

EVIDENCE 7-East leg conductor from south utility pole to north utility pole

EVIDENCE 8-West leg conductor from south utility pole to north utility pole

EVIDENCE 9-Drop line from north utility pole to drop pole at 5th wheel trailer

EVIDENCE 10-PG&E Electronic Data

EVIDENCE 11-NOLT Engineers report and photos

6 – PHYSICAL CONDITION OR CONDITIONS:

Fuels in the Cascade Fire area were comprised of a combination of heavy understory of shrub and oak, heavy brush fields, and grass and oak woodland. Elevation ranges from 300 to 1500 feet, and topography varies from flat ground to slopes around 35%.

Date:	Sunday, October 08, 2017	
Time:	11:00 PM	
Weather Station	**READER RANCH**	**BANGOR**
(SEE ATTACHMENT 18-Weather Data)		
Temperature:	61 degrees Fahrenheit	68 degrees Fahrenheit
Dew Point:	13 degrees Fahrenheit	15 degrees Fahrenheit
Relative Humidity:	15 percent	13 percent
Wind Speed:	10 miles per hour	6 miles per hour
Peak Wind Speed:	24 miles per hour	29 miles per hour
Peak Wind Direction:	67 degrees	75 degrees
Fuel Temperature:	59 degrees Fahrenheit	64 degrees Fahrenheit
Instrument Used:	RAWS Station 41809	RAWS Station 41201
GPS Coordinates:	39 18.13/121 07.02	39 23.51, /121 23.10
Elevation:	1968 feet above sea level	803 feet above sea level

On October 8, 2017 at 4:59 AM the National Weather Service Sacramento Weather Forecast Office issued a Red Flag Warning for October 8 through October 9th, 2017. The National Weather Service listed fire weather concerns of North to East wind 15 to 35 miles per hour (mph), gusts 40 to 55 mph, low humidity, and dry fuels (Attachment 18).

7 – VEHICLE/EQUIPMENT:

No vehicles or motorized equipment contributed to the start of the fire.

8 – PROPERTY:

The Cascade Fire consumed 9989 acres of land, destroyed 264 residences and outbuildings, and caused four civilian fatalities. The origin area was located on Cascade Way in Browns Valley California. Cascade Way is a rural dirt road with parcels ranging from 5-20 acres. The origin area is located at the address of 13916 Cascade Way, and the Yuba County Assessor Parcel Number is 044-120-003-000. (See attachment 6-Yuba County Property Information). The parcel is 20 acres in size with vegetation consisting of annual grasses and oak woodlands. The parcel had a 1,024 square foot garage built in 1982 and multiple travel trailer/fifth wheel/ RV's/ and cars on the property. Refer to the Cascade Incident Damage Inspection Summary (Attachment 19) for the complete damage inspection report.

9 – NARRATIVE:

At 11:02 PM on Sunday, October 8, 2017 the Grass Valley Emergency Command Center (GVECC) received a report of a vegetation fire on Cascade Lane near Neptune Road in the Browns Valley area of Yuba County. The initial report of the fire was from Jennifer JOHNSON from [redacted]. (ATTACHMENT 1- JOHNSON 911 Call) J. JOHNSON told 911 dispatchers the power went out and she saw a fire outside on the property. She said the fire was in the grass and going directly towards her house. J. JOHNSON described the fire as the size of a house. The dispatcher asked if the powerlines were down and J. JOHNSON said she did not know, but it is really windy. The dispatcher asked if the fire was behind her house, J. JOHNSON said it is in the front and about 100 ft. from the house. When asked by the dispatcher if she knew how the fire started, J. JOHNSON said, I have no idea, and J. JOHNSON told the dispatcher she was driving towards Marysville Road to leave the area.

On October 9, 2017 at about 1:09 AM I (Battalion Chief M. RUFENACHT) was dispatched to the Cascade fire by the GVECC. I arrived at the Cascade fire about 2:03 AM and met with Fire Captain Specialist Karen Villalobos on Marysville Road near Collins Lake. We did not start looking for the origin due to the threat to public safety with the erratic fire conditions and strong winds. Instead, we drove down Loma Rica Road to assist with evacuations of citizens who were unable to get out of the fire area. On Loma Rica Road, I encountered the fire burning in a very erratic manner. The fire I encountered was the left (South)flank of the fire and the wind shifted directions multiple times creating visibility issues while driving down the road.

After assisting with evacuations, VILLALOBOS and I returned to Cascade Way to search for the area of origin. The winds and erratic fire behavior had subsided and VILLALOBOS and I searched for a cause along Cascade Way. Near 13852 Cascade way I found Dozer Transport 2341 (D2341) parked and fire hose on the ground where crews had attempted to start a hose lay off Cascade Way going to the east. I met CAL FIRE Heavy Fire Equipment Operator Brent ROGERS the operator on D2341 and asked him what he had done that morning. ROGERS said he arrived on Cascade way, unloaded his dozer and cut line from Cascade Way going west on the north end of the fire. ROGERS said he was on the fire edge as he cut the line. ROGERS said he also cut the line to the east off

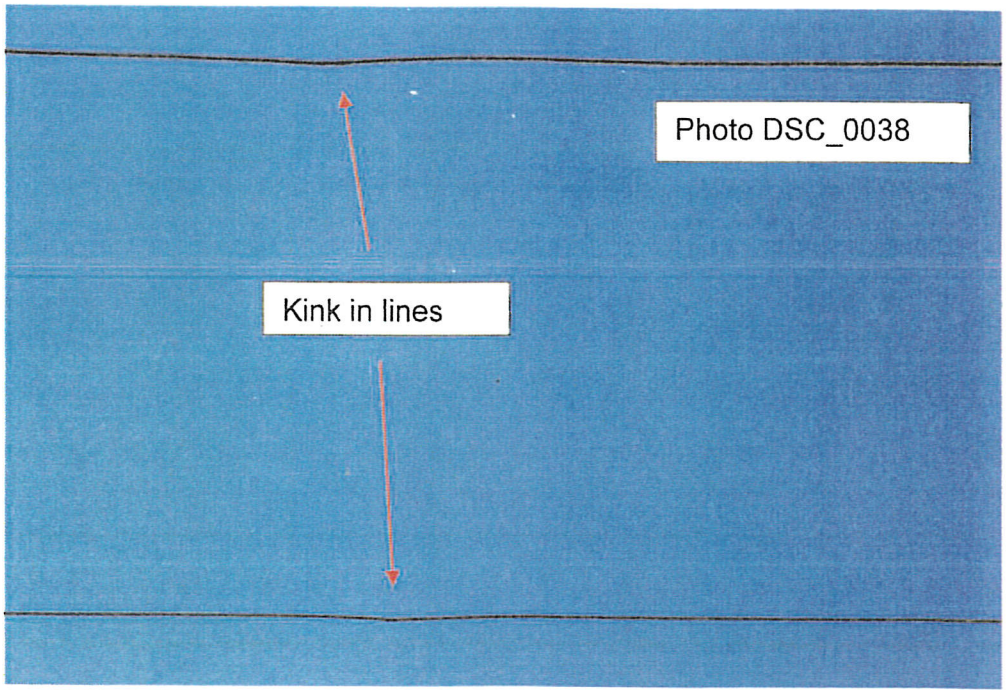
Cascade Way. After looking in the area along Cascade Way for about 30 minutes I decided to leave the Cascade fire because of the low light conditions, not finding any direct evidence along Cascade Way, and not knowing the size or damage of the McCourtney and Lobo fires. VILLALOBOS and I left at about 5:30 AM to try and secure any evidence which may be destroyed on the other fires. The wind along Cascade Way had subsided by 5:30 AM.

On October 9, 2017 at about 9:00 AM, VILLALOBOS received a voice message from Battalion Chief Landon HACK (B2313) regarding witness information from Matthew JOHNSON, the husband of Jennifer JOHNSON. At about 9:46 AM, VILLALOBOS Interviewed M. JOHNSON via cell phone and agreed to meet him at his property later that morning. At about 11:30 AM VILLALOBOS met with M. JOHNSON at his property at [redacted] (SEE ATTACHMENT 6) M. JOHNSON described what happened when the fire started as he had been told by his wife Jennifer JOHNSON. M. JOHNSON was not at the property when the fire occurred, but was at work as a Firefighter for the Yuba City Fire Department in Yuba City. M. JOHNSON said Jennifer JOHNSON was at home with their two kids. J. JOHNSON was watching TV when she heard a loud "POP" and the house lost power. J. JOHNSON looked outside toward the direction of the "shooting range" and saw a 20ft by 20ft or 30ft by 30ft fire burning. J. JOHNSON and the kids evacuated the house. After interviewing M. JOHNSON, he fed his livestock and left the property.

At about 12:00 PM VILLALOBOS (See Attachment 6 VILLALOBOS Supplemental) started looking for a possible fire origin on the JOHNSON property by identifying any damaged powerlines and/or trees in the powerlines. VILLALOBOS did not find any trees into the powerlines running above a shared barbed wire fence between the JOHNSON property and the RIDDLE property. The RIDDLE property at [redacted] is located north of the JOHNSON property (See Attachment 4). VILLALOBOS observed fire damage on the main power drop and electrical box at the JOHNSON's home. VILLALOBOS then looked for a possible fire origin on the RIDDLE property locating two powerlines appearing to hang differently than the other powerlines. VILLALOBOS observed the wood cross arm at the top of the power pole hanging at an angle and a separate low hanging powerline coming off the power pole running across the driveway and through tree branches towards a travel trailer. At the travel trailer VILLALOBOS observed fire damage to the travel trailer and an electrical box attached to a power pole. VILLALOBOS secured the JOHNSON

property at [redacted] and the RIDDLE property at [redacted] by placing flagging across driveways. At the RIDDLE driveway VILLALOBOS observed a cut lock on the gate. Next VILLALOBOS walked along Cascade Way. VILLALOBOS did not find any damaged powerlines or trees into the powerlines.

I arrived back at the scene at about 5:00PM on October 9 2017, and VILLALOBOS had been on Cascade way since about 12:00 PM. Assisted by VILLALOBOS, I started searching along Cascade Way for a fire cause and origin. Fire pattern indicators along Cascade Way identified the spread of the fire coming from the area of the RIDDLE or JOHNSON properties advancing east toward Cascade Way. Advancing indicators were also observed on the east side of Cascade Way moving east, from Cascade Way along the east side of the roadway. I checked the powerlines along east side of Cascade Way looking for any damage to the lines or equipment. I did not observe downed lines or any branches or vegetation in contact with powerlines along Cascade Way. VILLALOBOS showed me the powerlines on the RIDDLE property she observed earlier in the day. Using binoculars, I was able to see a mark on the east and west leg conductors. I was not able to identify what the mark was from the ground, but the marks looked in very close proximity to each other, and the conductors also appeared to have a kink in the line and line sag. I advised VILLALOBOS the lines were something we would need to rule out, and we continued looking at microscale and macroscale fire pattern indicators on the RIDDLE and JOHNSON Properties. At about 10:00 PM VILLALOBOS left the scene. I decided we would need to maintain scene security on a 24-hour basis until we were done with the origin and cause investigation. I remained at the scene overnight for scene security along Cascade Way at [redacted].



On Tuesday October 10, 2017 at about 7:30 AM while at a coffee shop in Marysville, VILLALOBOS was contacted by Marty REEVES. REEVES said his grandfather (Dean RIDDLE) owned the RIDDLE property. REEVES told VILLALOBOS Dean RIDDLE passed away and the family had been cleaning up the property. REEVES said he visited the property two weeks ago, and no one lives on the property. REEVES said he was unaware of any problems with the powerlines. VILLAOBOS finished talking with REEVES and returned to the scene. At about 9:00 AM VILLALOBOS relieved me. At about 9:30 AM Chief Jeremy MONROE arrived at the scene. VILLALOBOS and MONROE continued looking for the origin area on the RIDDLE and JOHNSON Properties. Analyzing fire pattern indicators, VILLALOBOS and MONROE determined the general origin area (GOA) as the RIDDLE property near the powerlines and placed flagging to mark the fire pattern indicators.

On Tuesday October 10, 2017 at about 4:17 PM M. JOHNSON arrived at his property to feed his livestock and talked to VILLALOBOS. (See attachment 6-VILLALOBOS supplemental) M. JOHNSON told VILLALOBOS the RIDDLE gate was known to be locked shut. The shooting range was last used about two weeks ago. PG&E inspected the powerlines in the area about one or two weeks ago. The last time M. JOHNSON saw anyone on the RIDDLE property was about one month ago. During this time, M. Johnson

was told by the RIDDLE family that someone was stealing from the RIDDLE property. M. JOHNSON stated Janis RIDDLE was the grandmother and Robert REEVES was a family member.

At about 6:00PM MONROE left the scene. At about 6:30 PM Gold Country Security arrived for scene security and was given instructions to not allow anyone on the RIDDLE or JOHNSON properties. At about 8:00PM VILLALOBOS left the scene.

On Wednesday October 11, 2017 at about 6:30 AM VILLALOBOS arrived at the scene and relieved Gold Country Security. At about 9:15 AM BARCKLAY arrived at the scene to assist VILLALOBOS. At about 2:21 PM the CAL FIRE Survey Team (GAWRONSKI and DEGRAFF) arrived to look at the scene for the ability to map and document the scene with surveying equipment. The CAL FIRE Survey Team left at about 3:00PM. At about 5:30 PM VILLALOBOS left the scene. At about 6:00PM Gold Country Security arrived for scene security and BARCKLAY left the scene.

On Thursday October 12, 2017 at about at about 6:30 AM VILLALOBOS arrived at the scene. Gold Country Security night shift left, and the day shift Gold Country Security arrived at about 7:00AM. At about 7:45 AM VILLALOBOS conducted a phone interview with J. JOHNSON to ask more questions. (See attachment 6-VILLALOBOS Supplemental) In summary, J. JOHNSON was up late watching TV while sitting on the couch. While watching TV, she heard what sounded like a tree branch hitting her house. Then the power went out and she saw a glow on the wall inside the house. She looked outside through the window blinds and saw a fire at the shooting range. The fire appeared to be burning in a line moving toward her house and was yellow/orange in color. After she saw the fire, J. JOHNSON got her two kids in the car and drove to the end of the driveway where she called 911 to report the fire. After reporting the fire, the JOHNSON family left the area. After evacuating her property, J. JOHNSON returned to her property with M. JOHNSON around 2:00 AM to check on the house. On the day of the fire, J. JOHNSON's daughter was outside walking her pig. Her son stayed inside the house because it was too windy to be outdoors. During the daytime, J. JOHNSON never noticed an interruption in power service. J. JOHNSON told VILLALOBOS, neither of her children had ever played with fire. She also told VILLALOBOS neither her or M. JOHNSON smoked, and she was unaware of anyone who wanted to hurt her or her family. J. JOHNSON told VILLALOBOS, from inside the living room of her home she could not see the workshop located on the RIDDLE property.

The last time J. JOHNSON saw anyone on the RIDDLE property was about a month ago, but she could not remember who it was. About two weeks prior to the fire starting, she saw PG&E driving the roads in the area.

On Thursday October 12, 2017, at about 1:30PM I flew over the scene and took photos. These photos are identified in the Aerial Photo Log. (Attachment 25-Aerial photos).

Gold Country Security completed a shift change at about 6:00 PM and maintained scene security.

On Friday October 13, 2017 at 10:15 AM I arrived with Jim NOLT (J H Nolt Associates Electrical, Mechanical, and Corrosions Engineers) and BARCKLAY at 13916 Cascade Way. I continued adding fire pattern indicator flags, and verified the fire pattern indicator flags VILLALOBOS and MONROE had placed indicating the GOA. The fire pattern indicator flags underneath the north and south utility poles on the RIDDLE property showed advancing fire indicators going away from the area below the conductors in the dead and dry annual grasses. This area was identified as the Specific Origin Area (SOA).

1

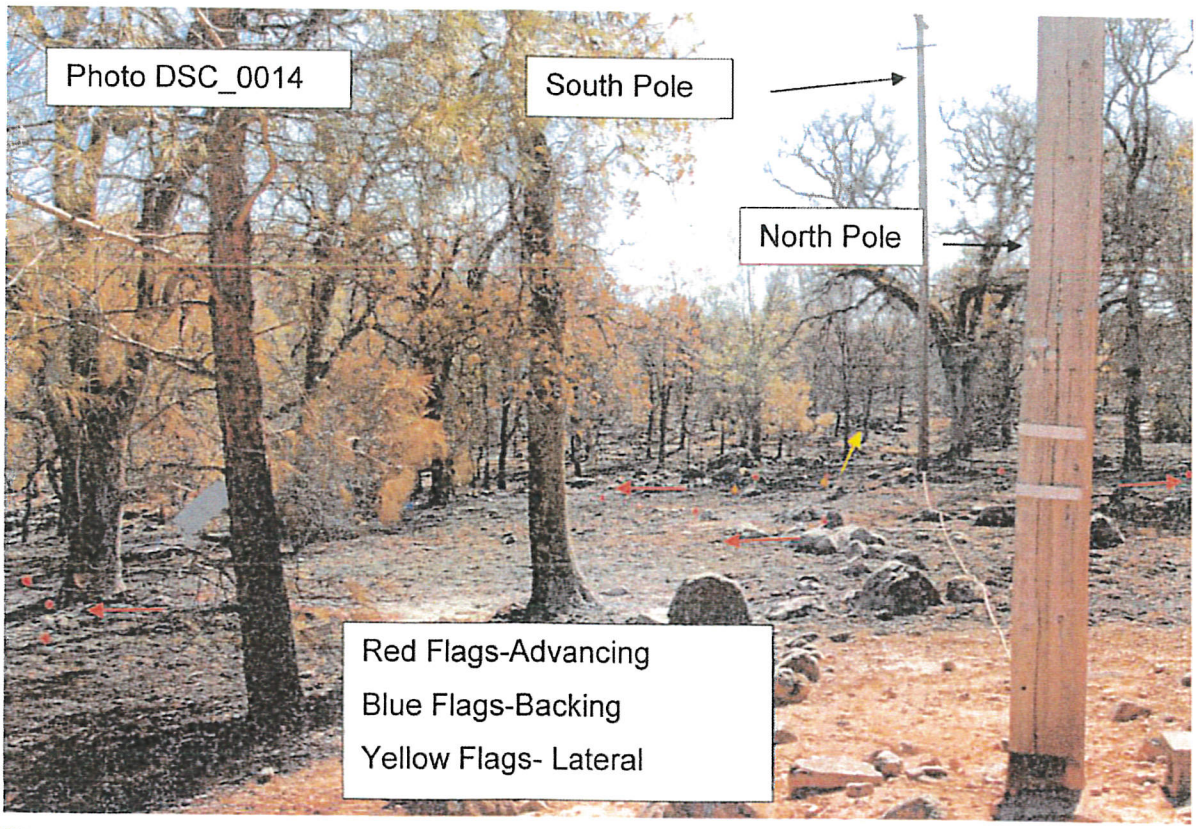
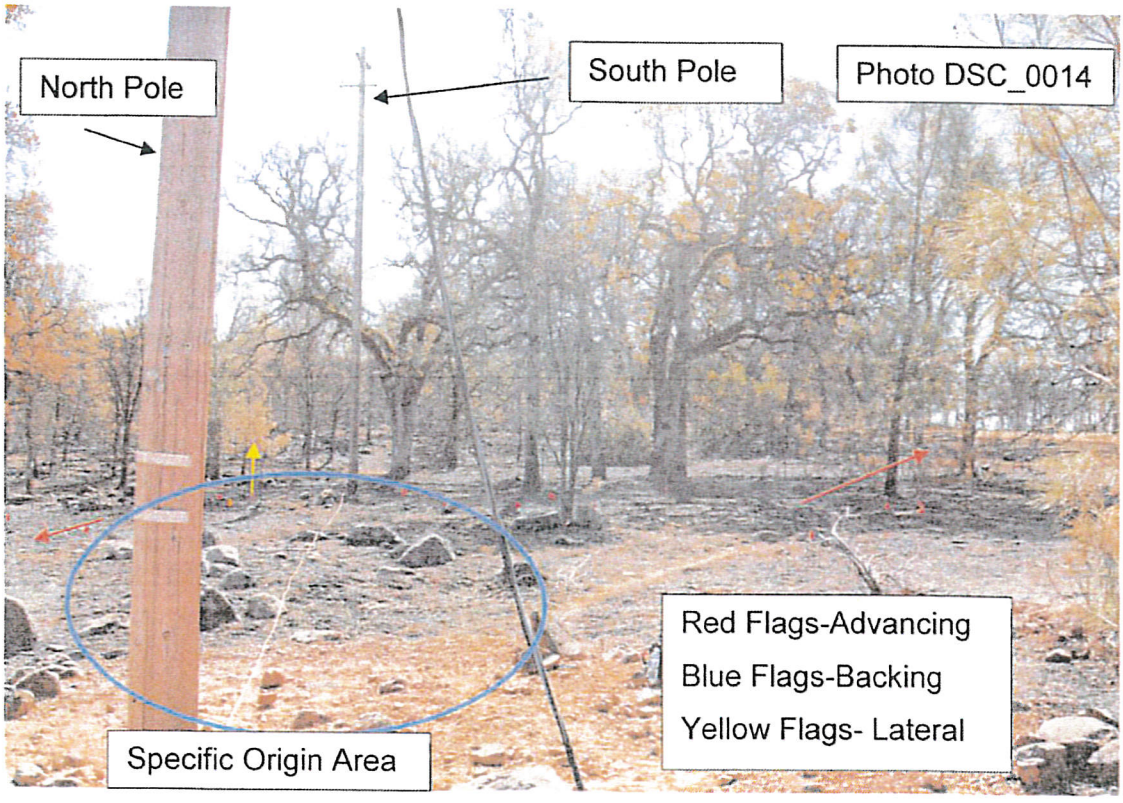
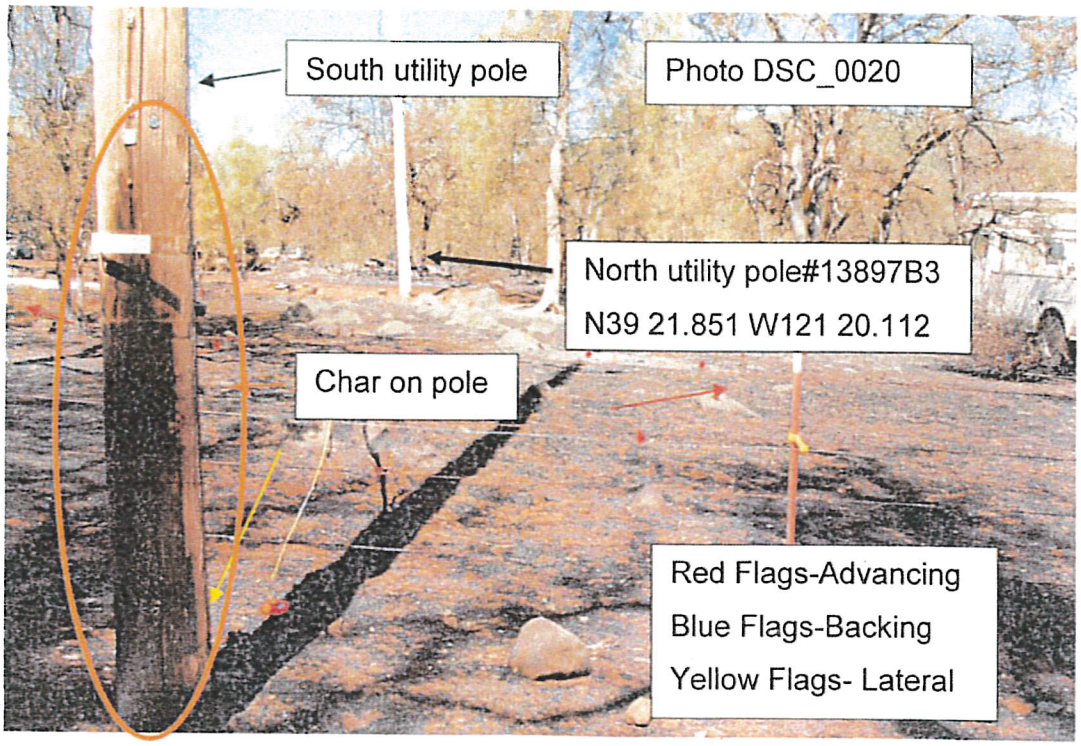


Photo DSC_0014
South Pole
North Pole
Red Flags-Advancing
Blue Flags-Backing
Yellow Flags- Lateral

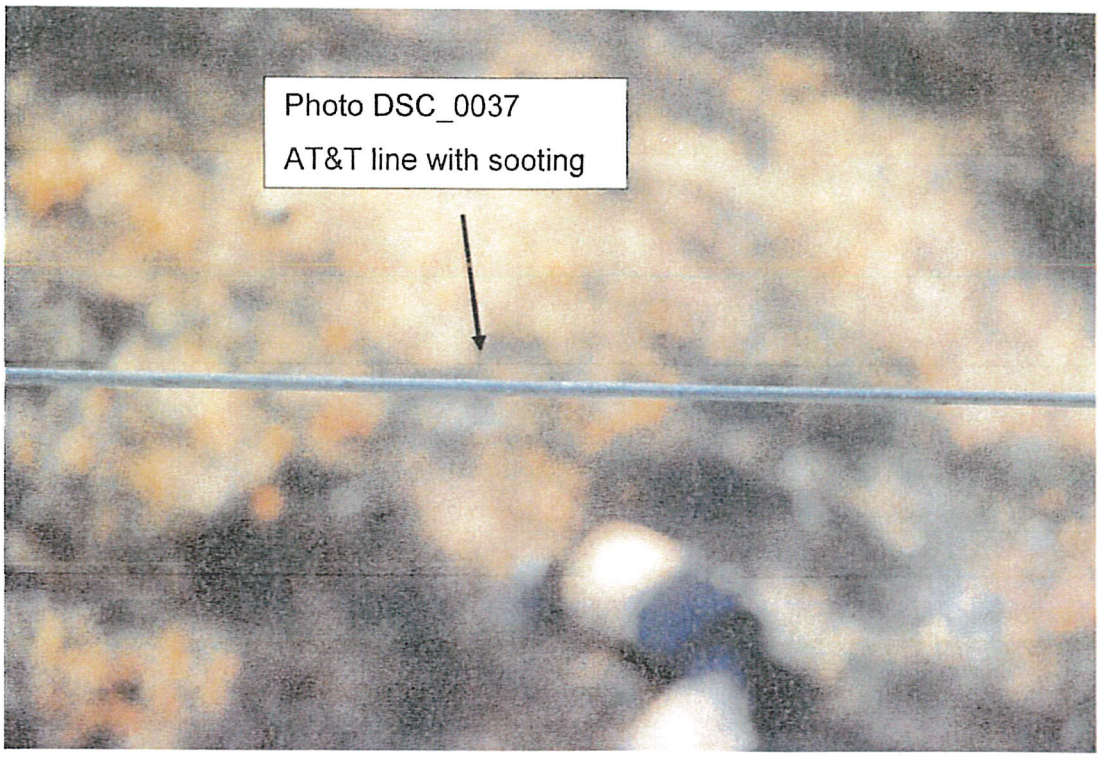
2


North Pole
South Pole
Photo DSC_0014
Red Flags-Advancing
Blue Flags-Backing
Yellow Flags- Lateral
Specific Origin Area

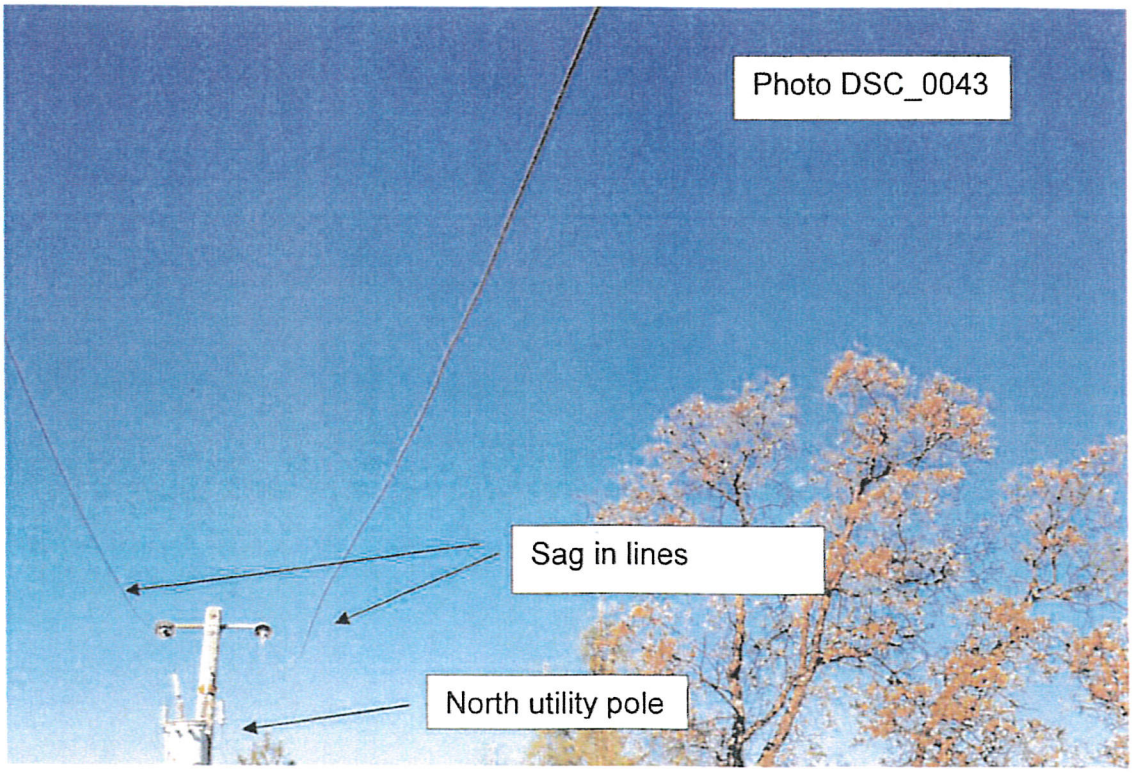
NOLT took measurements of the two utility poles. At 11:25 AM B/C VAN COR arrived at the scene with a Cyrus Tree Service crew. The Cyrus crew was brought in for their bucket truck. NOLT went up in the bucket truck to get an elevated view of the utility equipment. After NOLT came down, I went up in the bucket to view the equipment and take pictures. We did not touch the conductors or equipment and only made a visual examination of the equipment for the investigation.



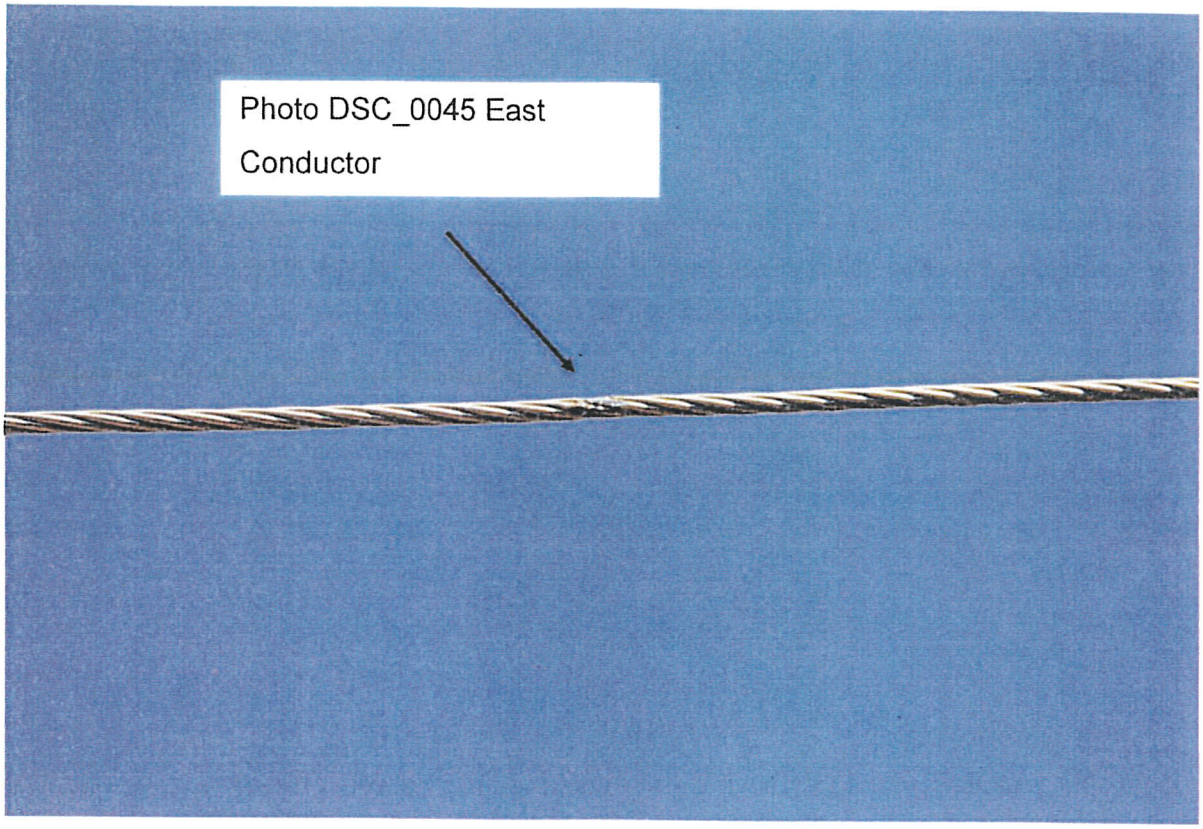
Examining the lines from the bucket truck I observed the AT&T communication lines had sooting on them. I could not visually see any damage to the AT&T communication lines attached between the two poles.

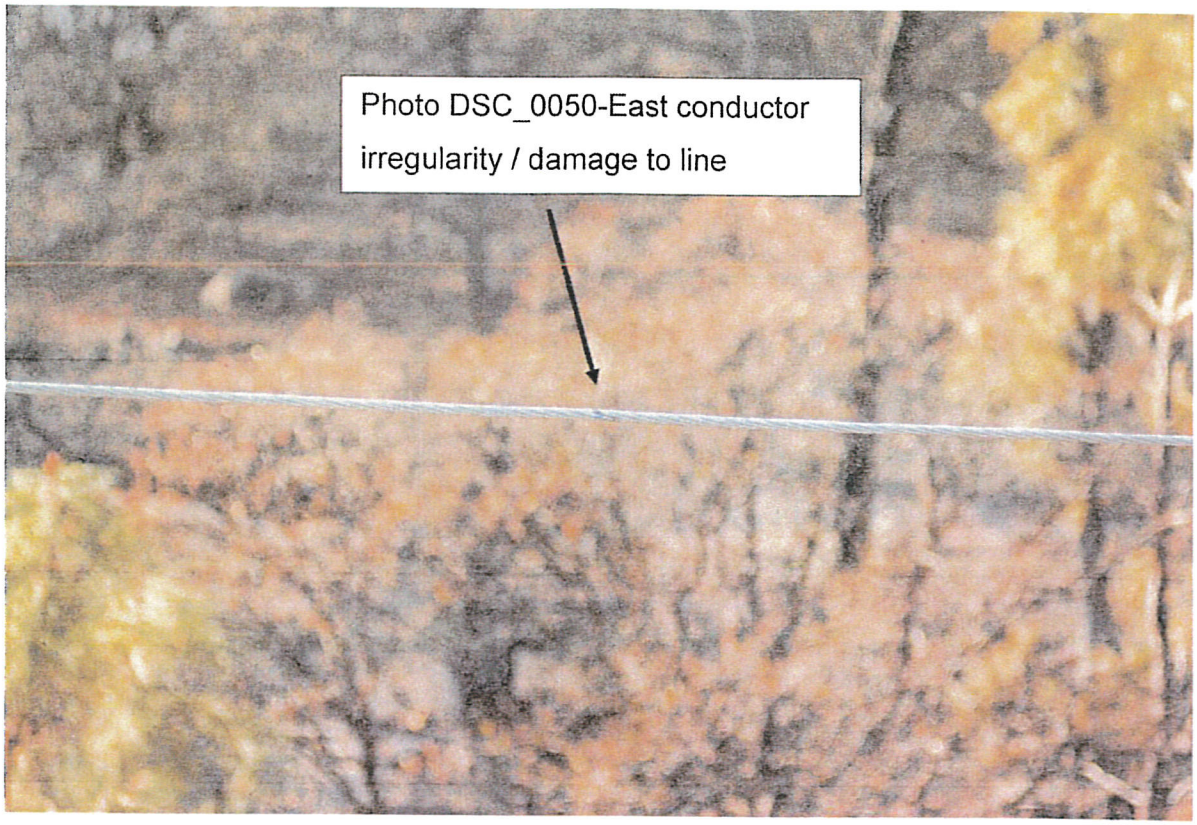


Examining the PG&E conductors the from the bucket truck, I observed sag in the lines.



From the bucket truck, I observed and photographed an irregularity on both the east and west conductors. The irregularities appeared to be damage to the lines. The damage appeared to be close to the same distance between the north and south utility poles. Jim NOLT completed an independent report of the electrical equipment at the scene (Attachment -7).

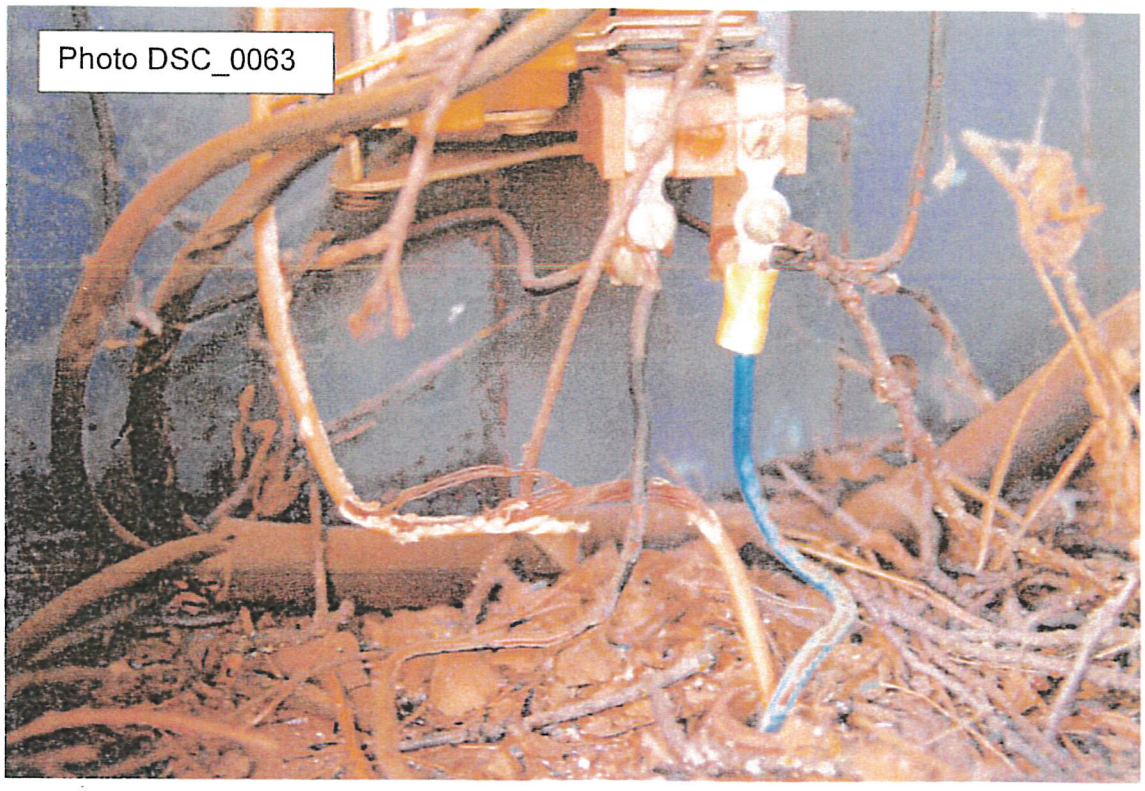




NOLT and I examined the well house to the RIDDLE property. Fire pattern indicators showed the fire moving toward the well house from the area of the north and south utility poles on the RIDDLE property. NOLT examined the well house electrical to rule the well house out as the cause of the fire (See Attachment 7 – NOLT Report). The well house was locked, and we cut the lock to gain access to the small metal enclosure. The inside of the well house was not consumed by fire (See photo DSC_0060).

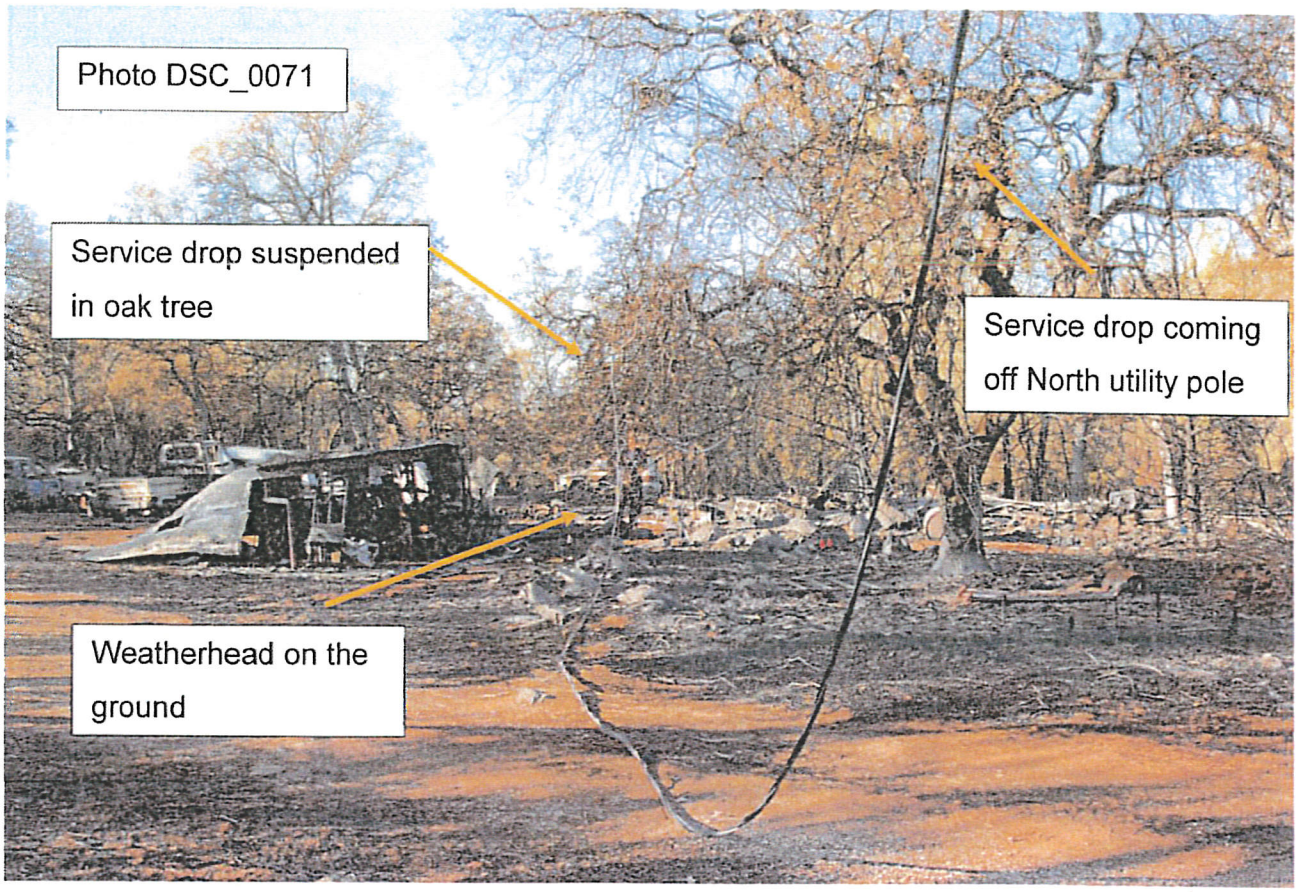
Photo DSC_0060-Inside of well house

The electrical panel inside of the well house appeared to be weathered and damaged by rodents (see photo DSC_0063).



NOLT examined the electrical (See NOLT report attachment 7) and the well shed was closed and sealed with plastic ties at the lock hasp.

NOLT and I checked the drop line coming off the north utility pole going to the weatherhead near the 5th wheel trailer. The service drop came off the pole and was lying on the ground (See photo DSC_0071). From the ground, the service drop went up off the ground held by an oak tree and was found near the weatherhead by the 5th wheel trailer.



I was unable to locate any tree branches on the drop line which would suggest the tree caused the drop line to contact the ground. I was unable to locate any limb damage, charring, pitting, or staining on the tree which would have been indicative of a live conductor making contact with the tree. The weatherhead, electrical meter, and electrical panel to the 5th wheel trailer were collected as evidence and sent to Anamet Inc. for further laboratory testing due to the extent of fire damage to the equipment. NOLT also looked at this equipment for analysis (See NOLT report - Attachment 7).

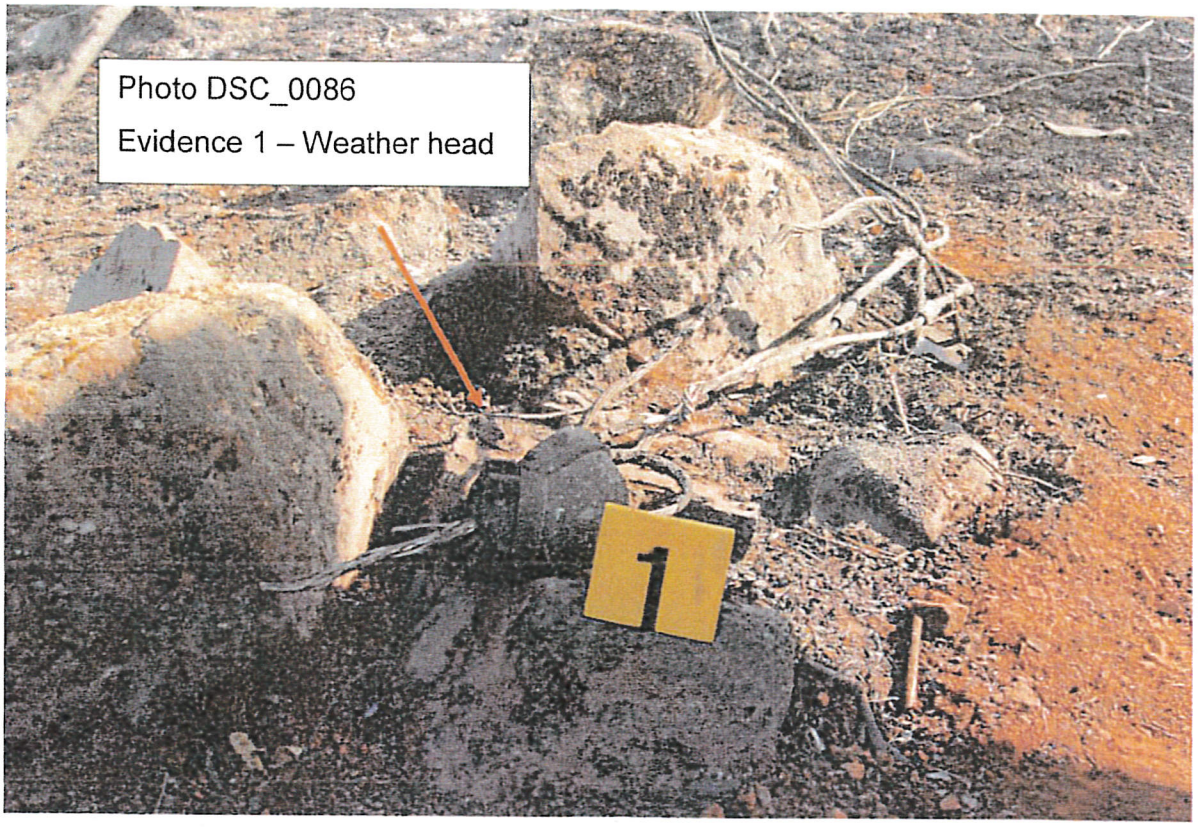
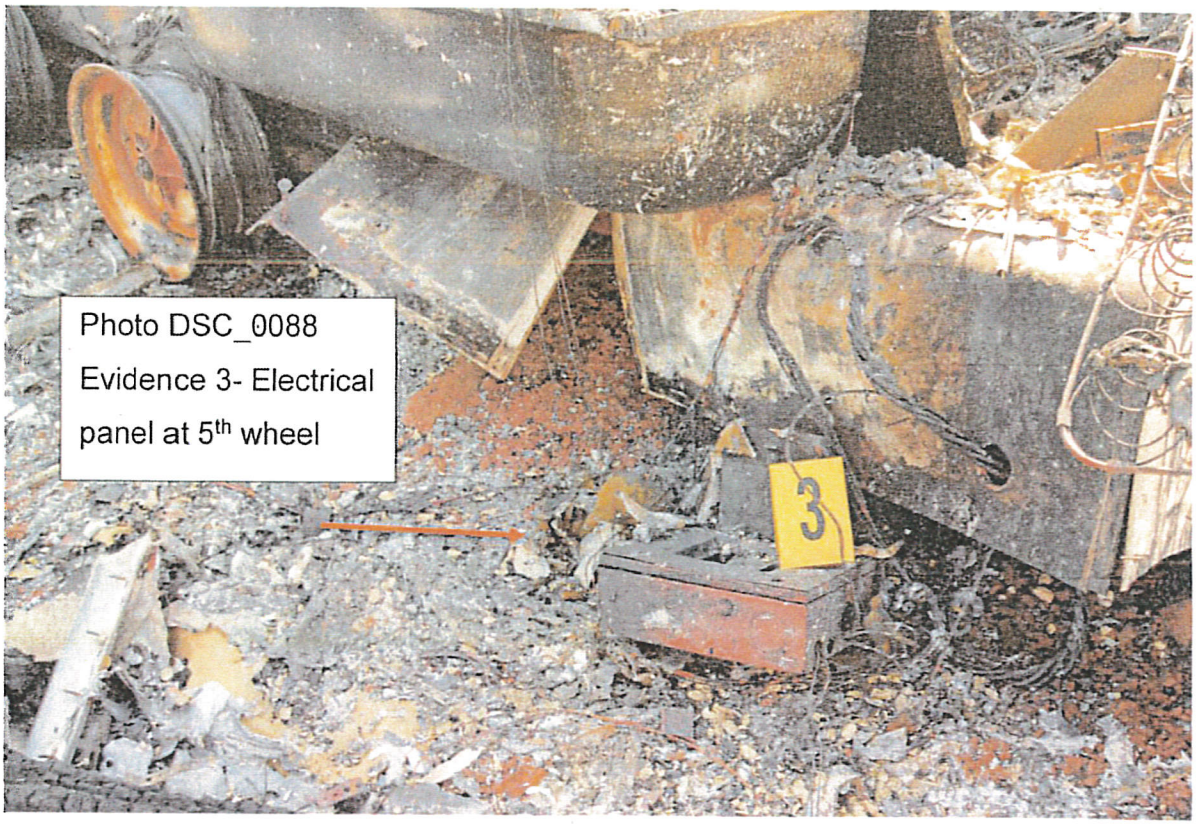


Photo DSC_0086
Evidence 1 – Weather head
1

1


Photo DSC_0087
Evidence 2 – Electrical meter
Near 5th wheel
2

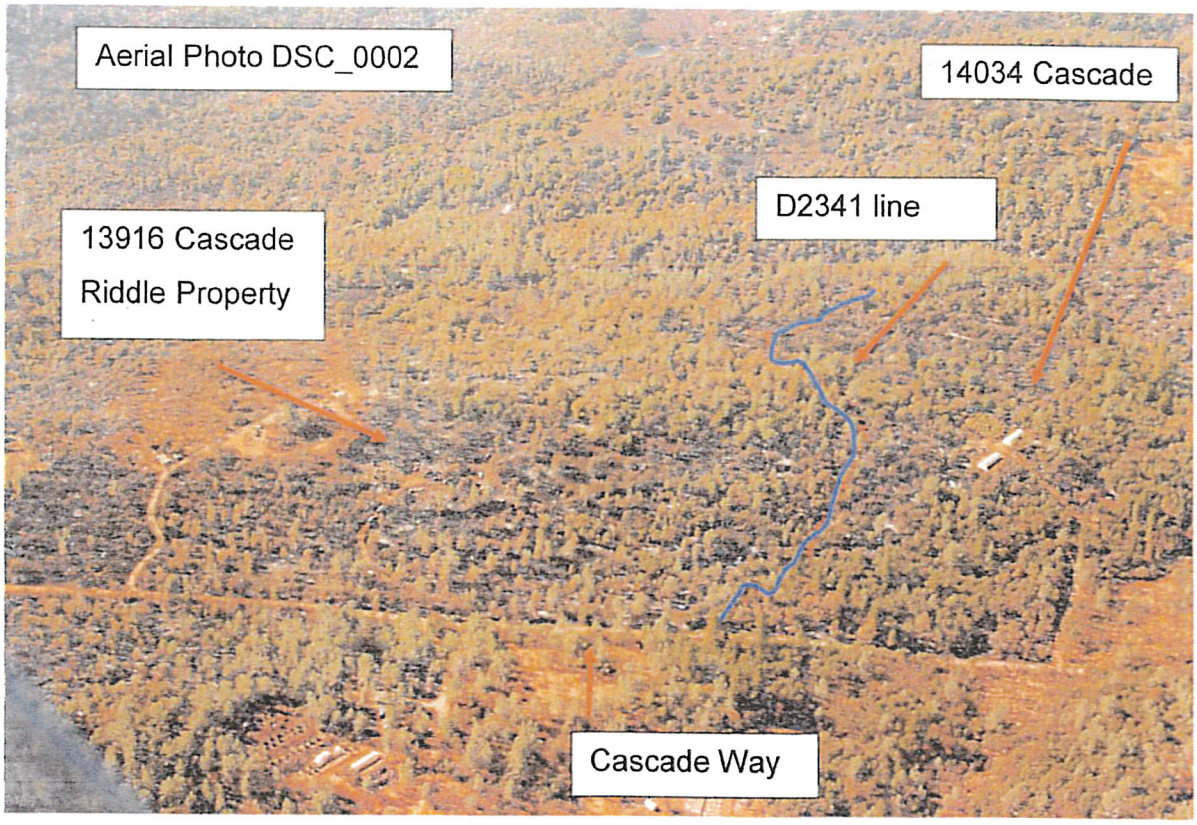
2



Following the wiring from the service drop to the electrical meter, I found wiring going to the 5th wheel and well house on the RIDDLE property. I was unable to locate any wiring going to the travel trailer or shop on the RIDDLE property.

On Friday October 13, 2017 at about 7:30 PM, I met with Janice RIDDLE at Neptune Rd. and Willow Glenn Rd. I asked RIDDLE when the last time she knew of anyone being on the property at [redacted]. RIDDLE said the last time was Saturday October 7, 2017. RIDDLE said her Dad died and the family has been trying to get the property cleaned up and the old cars removed. I asked her if anyone smoked on the property and she said no. I asked her if there was any burning or mowing which had occurred recently. RIDDLE said no and said they didn't do any of that due to the dry conditions making it too dangerous this time of year. I asked RIDDLE which buildings had power running to them. RIDDLE said power only went to the 5th wheel trailer and well, nothing else had power. RIDDLE said her PG&E bill for the property was about $4.00 a month. I asked her if they had any livestock on the property, and RIDDLE said there was no livestock on the property (See Attachment 8).

On Saturday October 14, 2017, at about 8:50 AM I checked the property at 14034 Cascade Way to check the area around the marijuana cultivation building and power pole on the property. I first observed the two grow sheds flying over the area on October 12th. This property is down slope and north of the RIDDLE property. The property had burned and dozer line construction was between 14034 Cascade Way and the RIDDLE property at [redacted]. I had contacted Dozer 2341 (Operator Brent ROGERS) on the early morning of October 9, 2017 and asked ROGERS where the fire line was at when he arrived on Cascade Way. ROGERS said the fire was on the north side of the RIDDLES property at [redacted]. ROGERS said he cut line on the north of the RIDDLES property as the fire was backing down the hill. ROGERS said later that morning a crew came in and put fire on the ground north of his dozer line near 14034 Cascade. ROGERS said he was cutting direct line. the Marijuana cultivation buildings and power pole at 14034 Cascade Way were not involved in fire until suppression crews arrived and used fire to improve the line (See Aerial Photo DSC_0002).



At about 9:20 AM on Saturday October 14, 2017, I interviewed Greg DANILYAN at his residence at [redacted] (See Attachment 9) . DANILYAN said the fire was on the north side of the JOHNSON driveway, and had not crossed to the south side of the driveway. DANILYAN said the fire was about 100-200 feet from Cascade Way. DANILYAN did not give a size of the fire, and I asked him if it was windy and his response was "insanely windy". DANILYAN had to leave but met me again at the property at about 2:00PM. I gave DANILYAN my camera and asked DANILYAN to take a picture of where he saw the fire the night of October 8, 2017 when he was driving out. DANILYAN took a picture of the driveway to Matt and Jennifer JOHNSON's house. I asked DANILYAN if he drove through smoke on his way out on October 8, 2017 and DANILYAN said "no". The photo DANILYAN took is DSC_0085, taken from Cascade Way looking west.

Photo DSC_0085-Taken by DANILYAN

Driveway at [redacted] (JOHNSON property)

On Saturday October 14, 2017 at about 10:00 AM I checked the electrical fencing on the JOHNSON property at [redacted] I first observed the electrical fencing on the night of October 9th, while providing scene security for the RIDDLE and JOHNSON properties. The electrical fencing was in need of repair as it had breaks in the fencing and was not intact like a functioning fence would be. West of the house I found the controller to the electric fence. The controller was unplugged and I was unable to locate an extension cord near the controller.

On Sunday October 15, 2017 at 9:00 AM the CAL FIRE Survey team arrived to document the scene using LIDAR and the Total Station measuring equipment. Once the CAL FIRE Survey Team had completed measuring the scene, I collected the following: (Evidence 1) electrical weatherhead near the 5th wheel trailer; (Evidence 2) the electrical main panel and meter near the 5th wheel; (Evidence 3) electrical panel to the 5th wheel; (Evidence 4) an unknown glass or sap material found in the SOA. (See Evidence Log for all evidence). I used a metal detector to look for any metal fragments

related to the cause of the fire in the SOA. I was unable to find any metal fragments or materials associated with electrical arcing below the conductors.

On Monday October 16, 2017 at about 9:55 AM VAN COR met with Jennifer JOHNSON and Matt JOHNSON at their residence at [redacted]. VAN COR had Jennifer JOHNSON photograph were she first saw the fire on Sunday October 8, 2017 (See Attachment 10).

On Tuesday October 17, 2017 at about 9:45 AM myself, B/C VAN COR, and CAL FIRE Attorney Dave WISEMAN using an AT&T crew (K. ODOM and R. LOPEZ) started collecting the communication lines between the north and south utility poles on the RIDDLE property at [redacted]. White tape was placed on the communication lines and a black mark using a Sharpie pen was used to mark the top of the line as it was hanging on the poles. Using the AT&T crew and bucket truck, the communication line was cut and taken as evidence. (Evidence 5) The communication line from the south utility pole to North utility pole was collected without the line touching the ground. (Evidence 6) The AT&T line from the north utility pole to the drop pole near the 5th wheel trailer, was collected and this line was partially on the ground.

On Tuesday October 17, 2017, at about 12:00PM a PG&E bucket truck and crew of two entered the fire scene. PG&E Frank STRICKFIELD and David PATTERSON JR. assisted us with removing the two PG&E conductors from between the north and south utility poles on the RIDDLE property at [redacted]. White tape was placed on the conductors and a black mark using a Sharpie pen was used to mark the top of the conductor as it was hanging on the poles. The conductors were cut by PG&E and we rolled the conductors as they were lowered down. Areas looking like there was damage to the conductor were wrapped with plastic bubble wrap to protect the area. The conductors did not touch the ground when they were lowered. (Evidence 7) is the east leg conductor from the south utility pole to the north utility pole. (Evidence 8) is the west leg conductor from the south utility pole to the north utility pole. Once the conductors were taken down and packaged, the service drop from the north utility pole going to the pole at the 5th wheel trailer was taken down and packaged as (Evidence 9). Part of the service drop was lying on the ground when it was taken down and packaged. At about

1:35 PM I placed a phone call to the RIDDLE's and JOHNSON's and advised them we were releasing the scene. At about 1:51 PM, I notified the GVECC the scene security was released and we left.

On March 30, 2018, at about 12:00PM I received PG&E data reports. These reports showed the PG&E electric maintenance/inspection daily log for the area near the GOA (See Attachment 16). The inspection dates on the daily log was dated 9/22/17. The records also contain a Cascade Incident Description and Factual Summary Report by PG&E. The Pole Detail Reports on Cascade Way list the last visit date, under inspection history as 10/22/2007. The PG&E data reports will have to be verified by the CPUC.

In April 2018, I received the CAL FIRE Survey Team overall site map (Attachment 13) for the Cascade Fire Origin. The overall site map documents the location of the indicator flags in the specific origin area (SOA).

On Wednesday May 23, 2018, I received copies of the PG&E Energy Statement' from the Riddle Property at [redacted] (See Attachment 15). The July, August, and September statements showed 0.000000 kWh in total usage for all three months. The charges were: July -$10.51

August -$9.86

September -$9.53

On May 24,2018, I received the Conductor Swing Diagram (See Attachment 13) prepared by CAL FIRE Survey Team Member David KAROLY. The conductor swing diagram shows the contact point for the conductors in the GOA.

On Monday July 30, 2018, I met Jim NOLT and CAL FIRE Battalion Chief Lance BERRY at Anamet Inc in Hayward California. NOLT examined evidence items:

Item 2- Electrical main panel with meter.

Item 3- Electrical panel to 5th wheel trailer.

NOLT examined these two items and on August 8, 2018, I received the report (Attachment 17). NOLT found no evidence of electrical failure or arcing from within or on the evidence that was examined.

On Wednesday August 29, 2018, I received an email from Anamet Inc. regarding the material characterization analysis for evidence item 4 (Sap like material found in the SOA). Anamet's results confirmed the material was indicative of rosin acids or pine resin. (Attachment 20).

OPINIONS & CONCLUSIONS

Based on my knowledge, training, and experience, 911 audio, witness statements, and evidence from the Cascade Fire, I believe the cause of the Cascade Fire was due to line sag during the October 8, 2017 wind event. The wind in conjunction with the line sag on the two-conductors located on the property at 13916 Cascade Way made contact creating an electrical arc. The electrical arc deposited hot burning or molten material on the ground in a receptive fuel bed causing the fire. I reserve the right to re-examine this report if additional information is discovered or provided to me that could amend or reinforce my opinions or conclusions.

M. Rufenacht 9/24/2018

M. Rufenacht #2456 Date
Battalion Chief, CAL FIRE
Nevada Yuba Placer Unit

10 – ATTACHMENTS:

1 Attachment 1 – Jennifer JOHNSON 911 Call
2 Attachment 2 – Wind 911 Audio Tapes
3 Attachment 3 – Wind Radio Traffic
4 Attachment 4 - Cascade Road APN/Address Map/ Yuba Co. Property Information
5 Attachment 5 – Google Earth view of Fire scene
6 Attachment 6 – F/C Villalobos Supplemental
7 Attachment 7 – NOLT Report
8 Attachment 8 –Rufenacht / RIDDLE Interview
9 Attachment 9 – Rufenacht / DANILYAN Interview
10 Attachment 10 –Van Cor / Jennifer JOHNSON Interview
11 Attachment 11 –Scene ICS 214's
12 Attachment 12 – Evidence log and documentation
13 Attachment 13 – CAL FIRE Survey Team Report
14 Attachment 14 – Yuba Co Coroner's Report
15 Attachment 15 – PG&E Energy Statement's for 13916 Cascade Way
16 -Attachment 16 – PG&E equipment documentation
17 -Attachment 17 – NOLT Report on Evidence Items 2,3
18 Attachment 18 -Weather Data
19 Attachment 19 -Damage Inspection Report /Post Incident Action Summary
20 Attachment 20 – Anamet Lab report of Evidence 4 (Pine resin)
21 Attachment 21 – LEFT BLANK
22 Attachment 22 – Wind Complex PIO Final Update
23 Attachment 23 – Cascade Crystal Report
24 Attachment 24 - Photos
25 Attachment 25 – Aerial Photos

ATTACHMENT B

CAL FIRE Nolt Report

ATTACHMENT

7

JHNolt Associates
ELECTRICAL, MECHANICAL & CORROSION ENGINEERS
107 BLUE CANYON WAY • FOLSOM, CA 95630-2003 • 916-988-2256

PURVEYOR TO EXCELLENCE

Letter of Transmittal			
To:	Mr. Christopher Van Cor CalFire 6105 Airport Road Redding, CA 96002	**Subject:**	Wind Complex - Cascade Fire Incident # 17-CA-NEU-026295 Request # O-0451 DOL 10/8&9/2017 Contract # 7CA02326
From:	Jim Nolt, P.E.	**Date:**	February 5, 2018

Enclosed is a CD containing electronic files and paper copies of the following items regarding the subject project:

1. Engineer's report regarding the subject incident and/or examination.
2. Engineer's photos and photo log regarding the subject incident and/or examination.

Based on legislation effective as of March 10, 2000, all Professional Engineers are required by the State Board for Professional Engineers and Land Surveyors and Section 463.5 of Title 16 of the California Code of Regulations to advise you that "the licensee is licensed by the Board for Professional Engineers and Land Surveyors".

with my Best Regards,

Jim Nolt, P.E.

JHN:7of9

JHNolt Associates
ELECTRICAL, MECHANICAL & CORROSION ENGINEERS

PURVEYOR TO EXCELLENCE

Project Status Memorandum			
To:	Mr. Christopher Van Cor CalFire 6105 Airport Road Redding, CA 96002	**Subject:**	Wind Complex - Cascade Fire Incident # 17-CA-NEU-026295 Request # O-0451 DOL 10/8&9/2017 Contract # 7CA02326
From:	Jim Nolt, P.E.	**Date:**	February 5, 2018

1 When:

1.01 Date of Loss: 10/08/2017, 1103hrs

1.02 Date of Exam: 10/13/2017

2 Where:

2.01 Loss address: Cascade Way and Marysville Rd, N of Collins Lk.

2.02 Exam address: same as loss address

3 Abstract: The most probable source of ignition was the electric arcing that was occurring on the conductors between the two utility poles indicated in Attachment 1. Both the concurrent wind event and the excessive slack in the high-voltage distribution conductors contribute to the probability above. The evidence of recent arcing on the two conductors confirms unauthorized contact between conductors. See photo 15 and 16 as typical.

4 What's There:

4.01 I was asked by BC Van Cor of CalFire to assist with the examination of the subject fire scene.

4.02 Upon arrival at the scene my attention was directed at the area indicated in Attachment 1 and photos 4 and 11 as typical.

4.03 The electrical service drop conductors originating at the transformer in photos 4 and 5 had fallen to the ground. See photos 5 through 10 as typical. The main electrical service entrance and meter socket remains are exhibited in photo 10 as typical.

4.04 My attention was also directed at the utility conductors between two adjacent utility poles numbered 13897B3 and ?3????2 as shown in Attachment 1. See photos 11 through 13 as typical. These conductors had severe droop problems and were not tensioned uniformly. See photos 5, 12 and 13 as typical.

4.05 The approximate halfway point between the two utility poles is indicated on the ground in photo 14. Above that general area there was evidence of conductors slapping together so as to produce arcing damage on the conductors themselves. See photo 15 and 16 as typical.

4.06 There was also a water well and well house providing water to the property. See photo 17 as typical.

4.07 Power was provided through PVC conduit to the well from the meter panel in photo 10. Water was returned to the same area via PVC piping. See photo 18 as typical. It was noted that rodents had taken up residence inside the well house pump control cabinet. See photos 19 and 20 as typical.

4.08 There was a debris pile near the electrical service entrance, the contents of which were fire damaged. See 21 as typical.

4.09 There was a trailer located a few feet from the electrical meter-service entrance. It was provided power by a flexible extension cord. It's circuit breaker panel and the large extension cord to it are seen in photo 22 as typical.

5 What's Not There:

5.01 Damage to the electrical equipment near the trailer and the meter-service entrance was severe enough that I was unable to identify an electrical source of ignition in that area.

5.02 There was no source of ignition at or near the water well house.

6 Why?/How?/Who?/Explain:

6.01 The most probable source of ignition was the electric arcing that was occurring on the conductors between the two utility poles indicated in Attachment 1.

6.02 Both the concurrent wind event and the excessive slack in the high-voltage distribution conductors contribute to the probability above. Refer to GO95, Appendix C Conductor Sags, Charts 1-4, to confirm that the existing conductor sag may have exceeded the requirements.

6.03 The evidence of recent arcing on the two conductors confirms unauthorized contact between conductors.

7 Evidence and Photos Taken:

7.01 Items taken as evidence and stored in a secure facility by JHNolt Associates:

7.01.01 none

7.02 During my examination I took a total of 140 color digital photographs of which 20 are included in this memorandum as printed images.

7.03 Also included are two CalFire photos that are more illustrative of the 12kV conductor slapping and resultant arcing damage than I was able to obtain.

7.04 Colored lens filters were not used. These photographs were taken to provide demonstrative evidence. Photos included in this document or that have been provided otherwise have had their file size electronically reduced from the range of 5MB to 9MB each to an average of 95KB each for processing convenience. All photo files have been preserved outside this document in their original size and resolution.

8 Recommended Next Step(s):

8.01 The automatically recorded electronic data collected by the SCADA (Supervisory, Control and Data Acquisition) system that the utility uses to monitor their distribution lines may have detected and recorded the line slapping at this scene as a phase-to-phase fault. If it was detected there may also be a date and time stamp as well as the approximate ampacity and approximate location of the fault(s). This data will both validate the line slapping evidence and it will also provide a reliable date and time stamp for the event(s). See CalFire photos labeled herein as photos 15 & 16.

8.02 Use the incident LIDAR survey data and refer to GO95, Appendix C Conductor Sags, Charts 1-4, to confirm that the existing conductor sag may have exceeded the maximum requirement of approximately 4-5".

8.03 This memorandum, its observations, conclusions and recommendations may be only one part of the multi-disciplinary investigations and examinations that are often necessary. It is rare that data from one particular discipline, when viewed selectively or in isolation, can encompass or provide understanding about the entirety of an event or issue. Therefore, it is recommended that the necessary actions and/or meetings among experts be conducted so that the material in this memorandum can be integrated with material from other disciplines so

as to create a more complete picture and understanding of this event.

9 Other:

9.01 Confidentiality Notice - This memorandum in its entirety and any attachments to it is intended only for the individual or entity to which it is addressed and may contain confidential and/or privileged material. Any unauthorized review, use, disclosure or distribution is prohibited. See §9.04 below. If you are not the intended recipient, or the employee or agent responsible for delivering this material to the intended recipient, please contact the author and destroy all copies of this document.

9.02 Reservations - This completes my project status memorandum based on the tasks I have completed to date and/or been asked to complete to date. This work, its observations, its analysis, its conclusions and its recommendations are part of a very context sensitive and iterative process which may include critical information that may have been destroyed, obscured, missed or not yet understood within the context of the incident. Therefore, I reserve the right to amend or augment these opinions and/or this memorandum if new pertinent information or data is provided to me or is discovered by me at a later date.

9.03 Computer-Generated Material - Computer-generated material can be provided in computer files without warranty whatsoever as a professional courtesy by JHNolt Associates. Use of those computer files implies your acceptance of all computer risk associated with its use. JHNolt Associates will therefore be held harmless from any computer risk, real or alleged, that results from the use those computer files or the data they contain.

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- 9.04.04 any distortion of or modification of this document,
- 9.04.05 any use of this document in any derogatory action that would be prejudicial to the author's honor or reputation.

Attachment 1

North

Distribution conductor line-slap area was between pole at North (# 13897B3) and pole at South (# ?3?????) ends of indicated area.

South

Photos

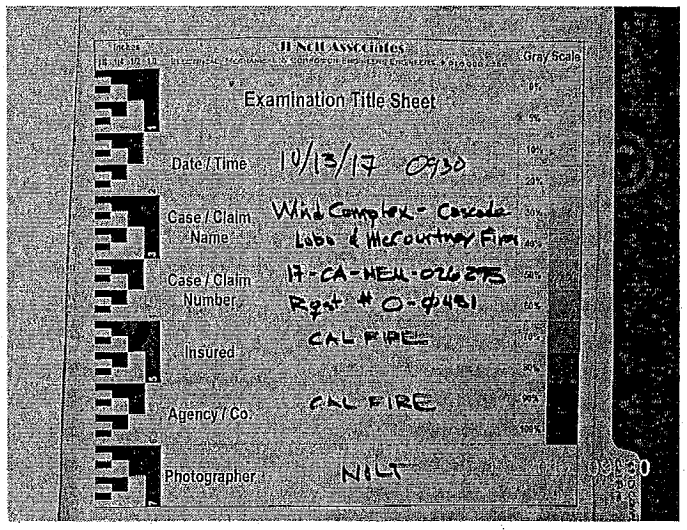


Photo 1

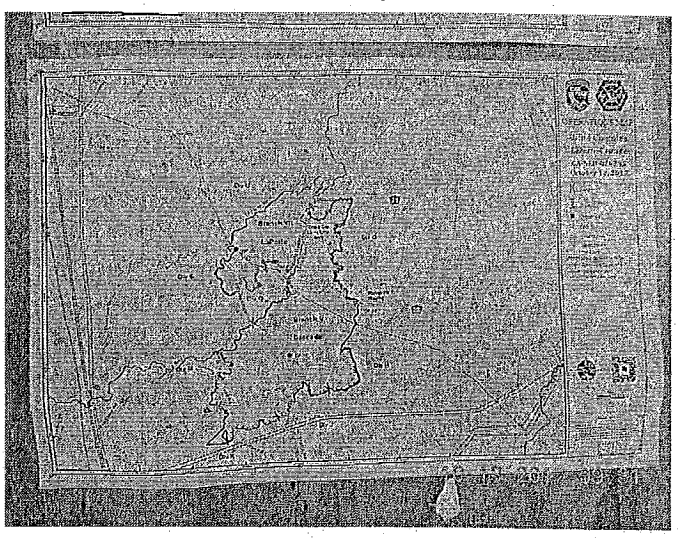


Photo 2

Photo 3

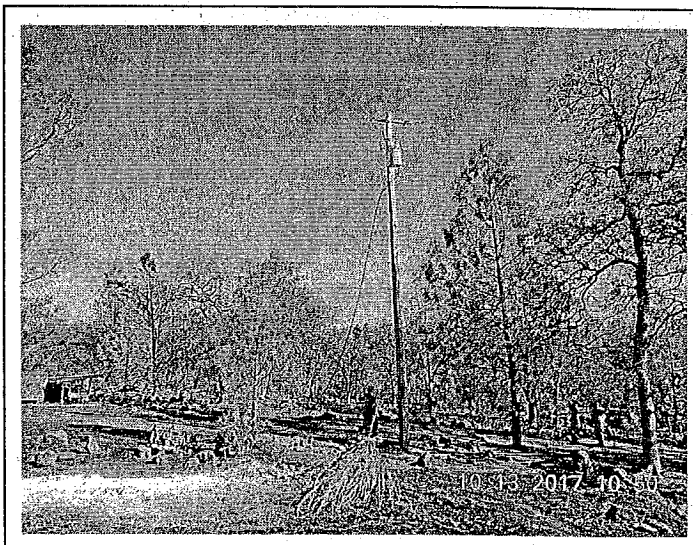


Photo 4

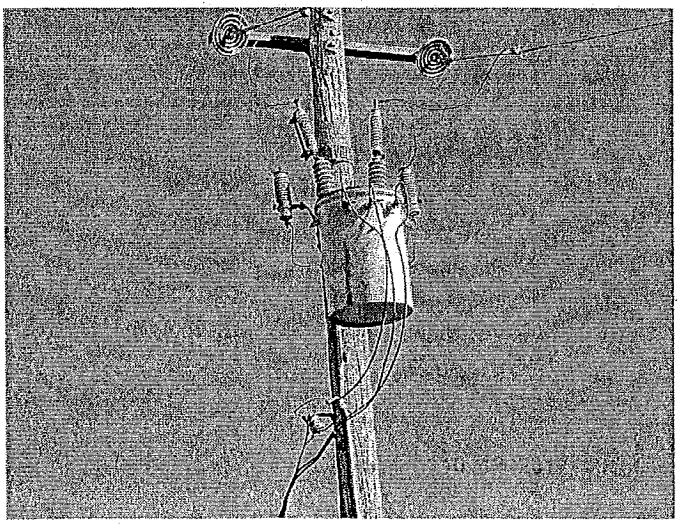


Photo 5

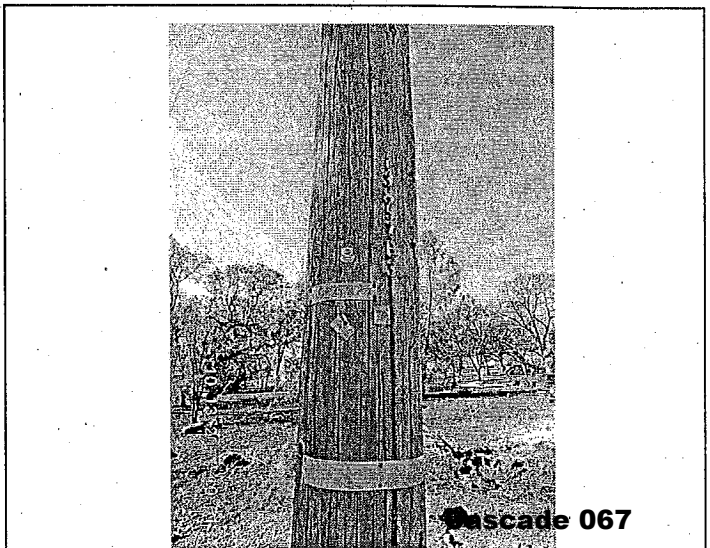


Photo 6

Photos

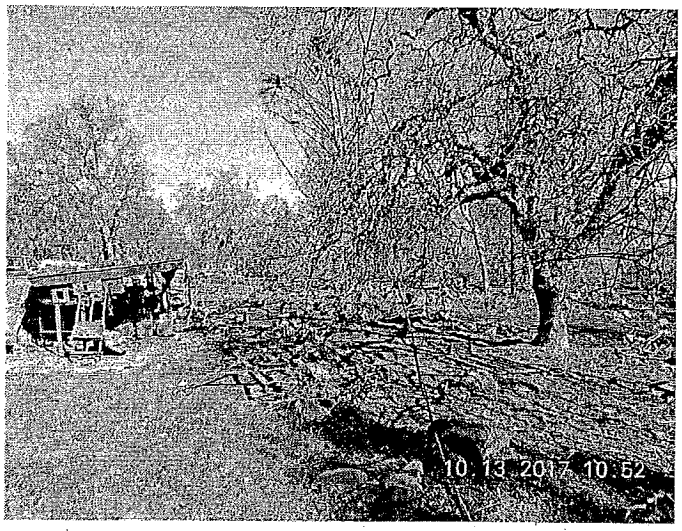


Photo 7

Photo 8

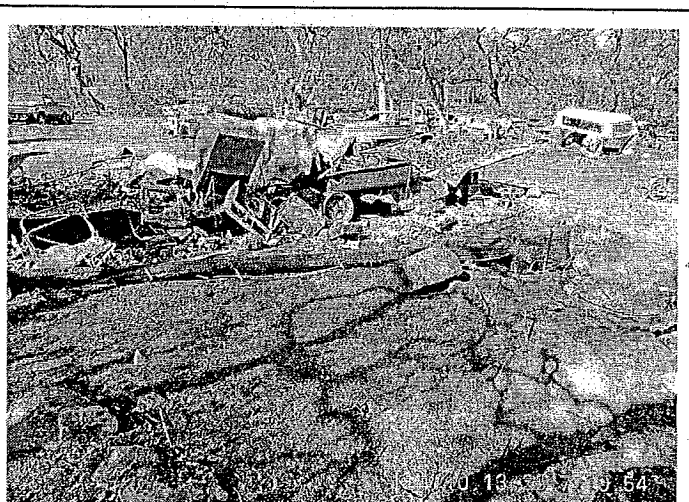


Photo 9

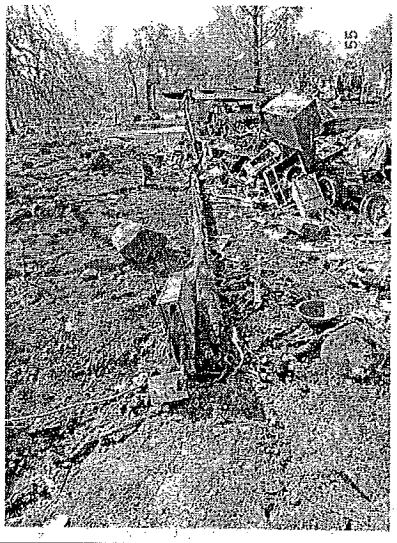


Photo 10

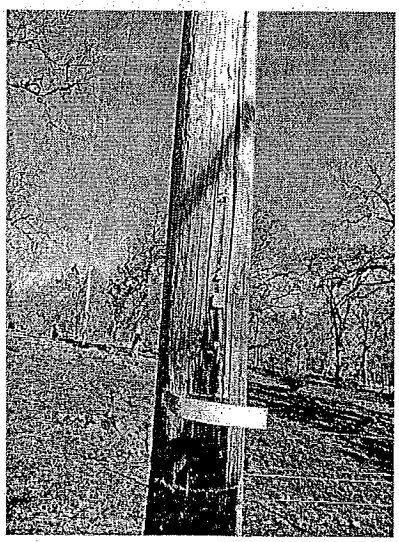


Photo 11

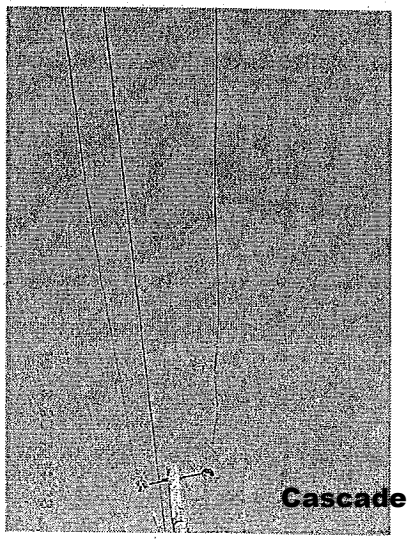


Photo 12

Photos

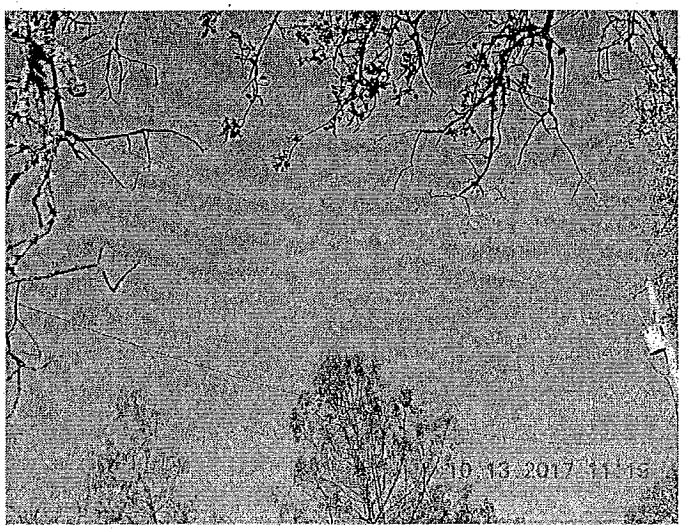


Photo 13

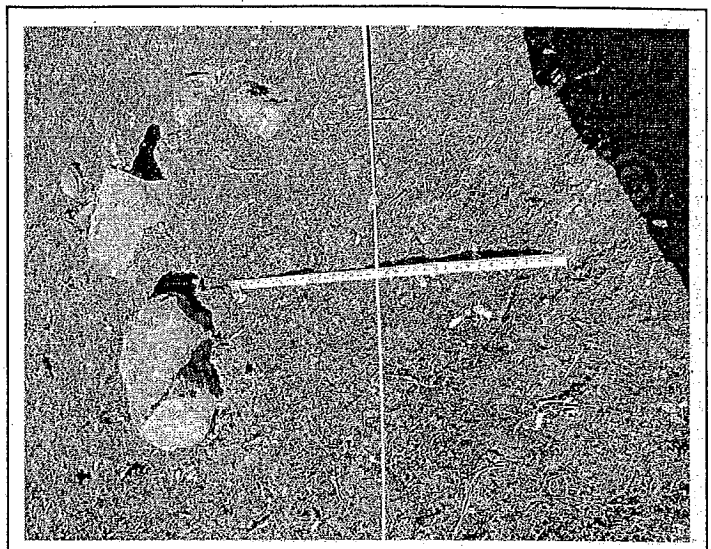


Photo 14

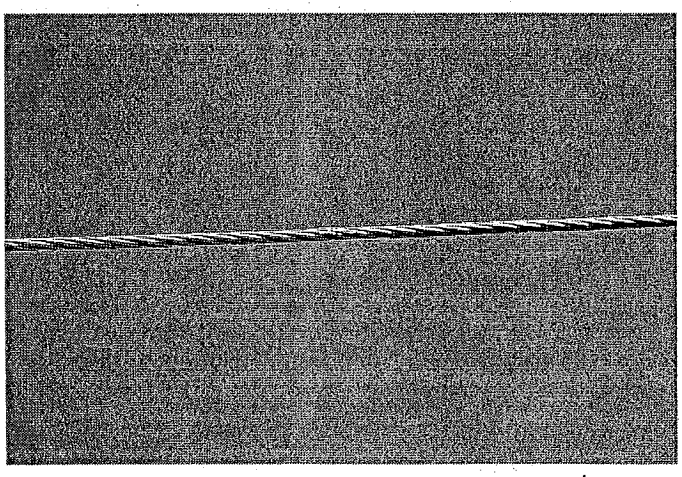


Photo 15 - CalFire photo # DSC_0045

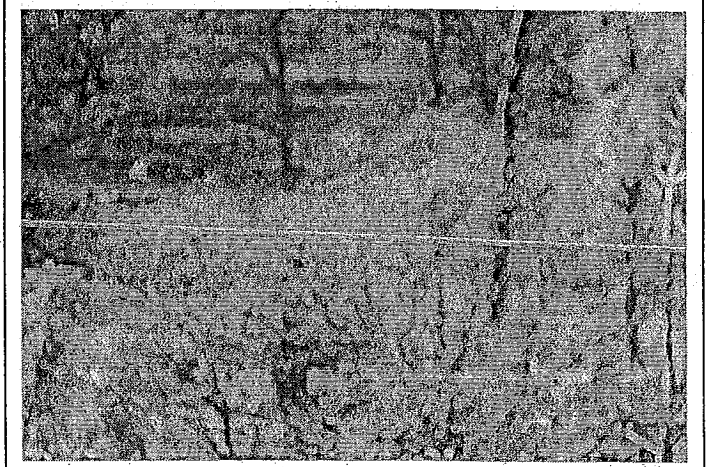


Photo 16 - CalFire photo # DSC_0050

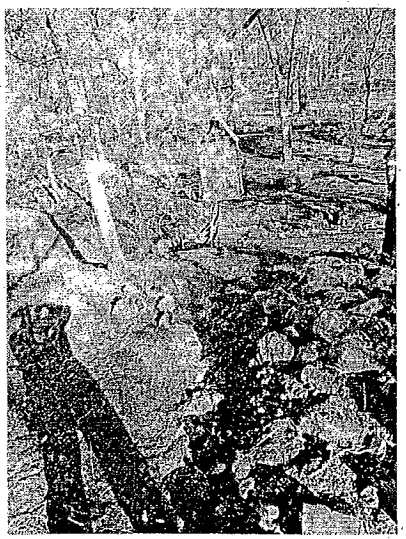


Photo 17

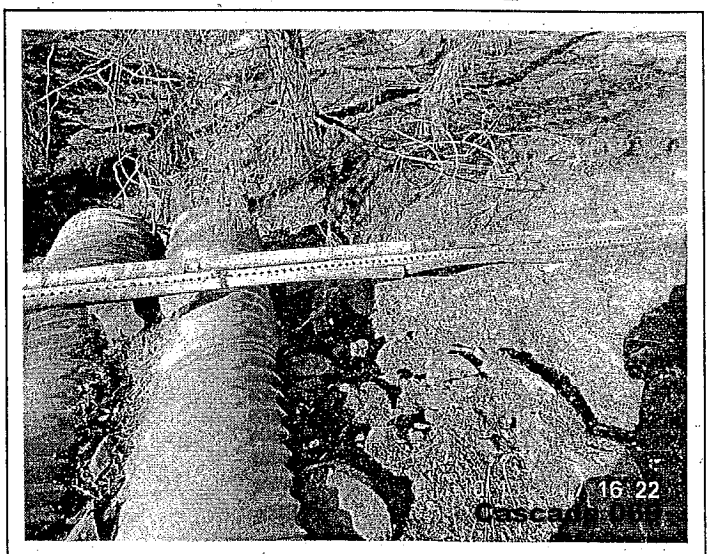


Photo 18

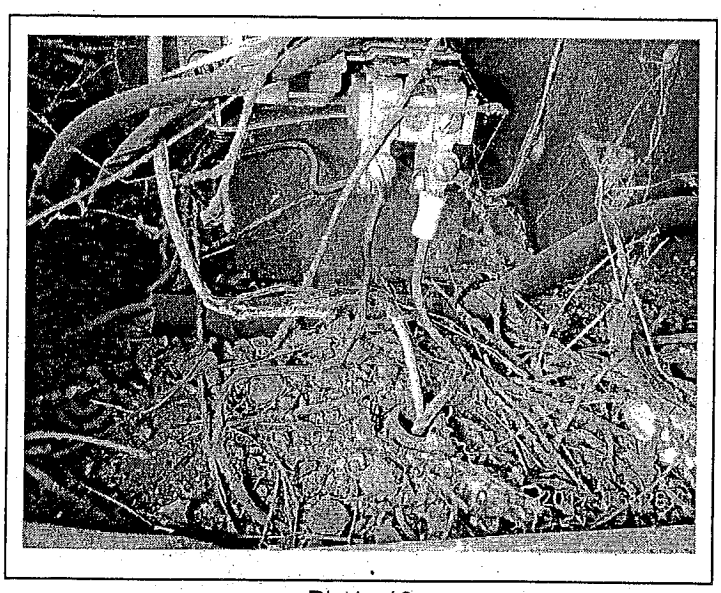


Photo 19

Photo 20

Photo 21

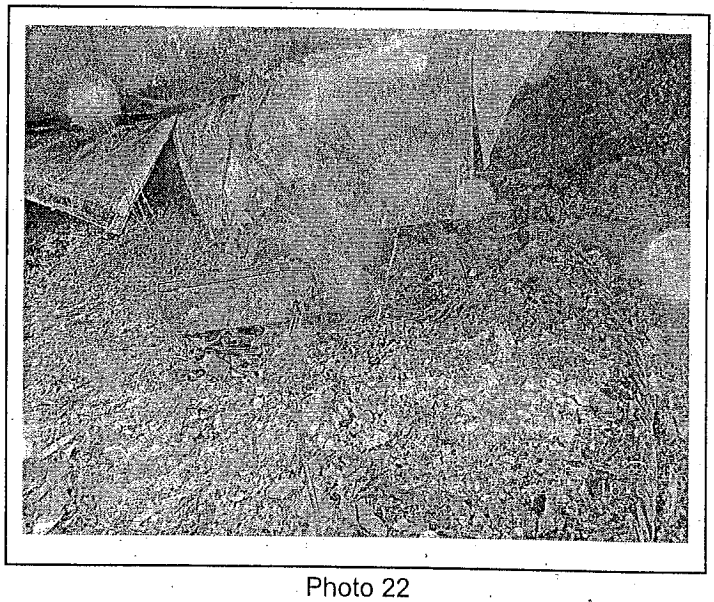


Photo 22

Not Used

Photo 23

Not Used

Photo 24

Photo log for Engineer's photos taken regarding: CalFire Wind Complex - Cascade Fire		
Photo #	**File Name**	**Description**
1	DSCN9606	Examination title sheet
2	DSCN9607	CalFire operations map dated Oct 12, 2017
3	DSCN9608	CalFire operations map dated Oct 12, 2017
4	DSCN9609	CalFire Wind Complex Fact Sheet dated Oct 12, 2017, 0615
5	DSCN9610	utility pole along Cascade Way at power line to property
6	DSCN9611	utility pole along Cascade Way detail at power line to property
7	DSCN9612	power line to property
8	DSCN9613	power line and transformer to property
9	DSCN9614	Riddle property entrance
10	DSCN9615	Johnson Acorn Ridge property entrance
11	DSCN9616	utility pole # 13879B4 PGE # 0637?1 with transformer
12	DSCN9617	utility pole # 13879B4 PGE # 0637?1 with transformer
13	DSCN9618	utility pole # 13879B4 PGE # 0637?1 with transformer
14	DSCN9619	utility pole # 13897B3 - PGE# 063792 with transformer
15	DSCN9620	utility pole # 13897B3 - PGE# 063792 with transformer
16	DSCN9621	utility pole # 13897B3 - PGE# 063792 with transformer
17	DSCN9622	utility pole # 13897B3 - PGE# 063792 with transformer and downed service drop conductors
18	DSCN9623	downed service drop conductors looking North
19	DSCN9624	downed service drop conductors looking North
20	DSCN9625	downed service drop conductors near service entrance
21	DSCN9626	downed service drop conductors near service entrance and weather head
22	DSCN9627	downed service drop conductors near service entrance and weather head
23	DSCN9628	downed service drop conductors near service entrance and weather head
24	DSCN9629	downed service drop conductors near service entrance and weather head
25	DSCN9630	downed service drop conductors near service entrance and weather head
26	DSCN9631	downed service drop conductors near service entrance and weather head
27	DSCN9632	service entrance meter box remains
28	DSCN9633	service entrance meter box remains
29	DSCN9634	service entrance meter box remains
30	DSCN9635	service entrance meter box remains
31	DSCN9636	service entrance meter box remains detail
32	DSCN9637	circuit breaker panelboard detail
33	DSCN9638	circuit breaker panelboard detail
34	DSCN9639	circuit breaker panelboard detail
35	DSCN9640	utility pole # 13897B3 - PGE# 063792 with transformer and downed service drop conductors detail
36	DSCN9641	utility pole # 13897B3 - PGE# 063792 insulator detail
37	DSCN9642	utility pole # 13897B3 - PGE# 063792 insulator detail
38	DSCN9643	utility pole # 13897B3 - PGE# 063792 crossarm mounting detail
39	DSCN9644	utility pole # 13897B3 - PGE# 063792
40	DSCN9645	utility pole # 13897B3 - PGE# 063792 detail

Cascade 071

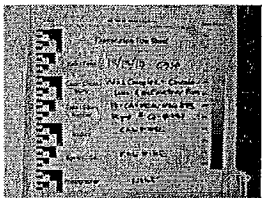
Photo log for Engineer's photos taken regarding: CalFire Wind Complex - Cascade Fire		
41	DSCN9646	lateral to utility pole # 13897B3 - PGE# 063792 from pole #?3?????2 PGE # ???
42	DSCN9647	lateral to utility pole # 13897B3 - PGE# 063792 from pole #?3?????2 PGE # ???
43	DSCN9648	lateral to utility pole # 13897B3 - PGE# 063792 detail from pole #?3?????2 PGE # ???
44	DSCN9649	lateral to utility pole # 13897B3 - PGE# 063792 looking north from pole #?3?????2 PGE # ???
45	DSCN9650	lateral to utility pole # 13897B3 - PGE# 063792 looking north
46	DSCN9651	lateral to utility pole # 13897B3 - PGE# 063792 looking north detail
47	DSCN9652	lateral to utility pole # 13897B3 - PGE# 063792 looking north detail
48	DSCN9653	lateral to utility pole # 13897B3 - PGE# 063792 looking north detail
49	DSCN9654	lateral to utility pole # 13897B3 - PGE# 063792 looking north detail
50	DSCN9655	lateral to utility pole #?3?????2 PGE # ??? detail
51	DSCN9656	lateral to utility pole # 13897B3 - PGE# 063792 looking north measurement detail
52	DSCN9657	lateral to utility pole # 13897B3 - PGE# 063792 looking north measurement detail
53	DSCN9658	lateral to utility pole # 13897B3 - PGE# 063792 looking north measurement detail
54	DSCN9659	lateral to utility pole # 13897B3 - PGE# 063792
55	DSCN9660	lateral to utility pole # 13897B3 - PGE# 063792
56	DSCN9661	lateral to utility pole # 13897B3 - PGE# 063792 center of span
57	DSCN9662	lateral to utility pole # 13897B3 - PGE# 063792 center of span
58	DSCN9663	lateral to utility pole # 13897B3 - PGE# 063792 center of span
59	DSCN9664	lateral to utility pole # 13897B3 - PGE# 063792 center of span
60	DSCN9665	lateral to utility pole # 13897B3 - PGE# 063792 center of span
61	DSCN9666	lateral to utility pole # 13897B3 - PGE# 063792
62	DSCN9667	lateral to utility pole # 13897B3 - PGE# 063792 center of span
63	DSCN9668	lateral to utility pole # 13897B3 - PGE# 063792 center of span
64	DSCN9669	lateral to utility pole # 13897B3 - PGE# 063792 center of span
65	DSCN9670	lateral to utility pole # 13897B3 - PGE# 063792 center of span
66	DSCN9671	top of utility pole # 13897B3 - PGE# 063792
67	DSCN9672	top of utility pole # 13897B3 - PGE# 063792
68	DSCN9673	lateral to utility pole # 13897B3 - PGE# 063792 center of span
69	DSCN9674	lateral to utility pole # 13897B3 - PGE# 063792 center of span
70	DSCN9675	top of utility pole # 13897B3 - PGE# 063792
71	DSCN9676	top of utility pole at lateral to utility pole # 13897B3 - PGE# 063792
72	DSCN9677	downed service drop conductors near service entrance
73	DSCN9678	electric smartmeter remains
74	DSCN9679	electric smartmeter remains
75	DSCN9680	propane canisters at trailer
76	DSCN9681	propane canisters at trailer
77	DSCN9682	propane canisters at trailer
78	DSCN9683	lateral to utility pole # 13897B3 - PGE# 063792 center of span from above in bucket
79	DSCN9684	lateral to utility pole # 13897B3 - PGE# 063792 center of span from bucket
80	DSCN9685	lateral to utility pole # 13897B3 - PGE# 063792 center of span from bucket
81	DSCN9686	lateral to utility pole # 13897B3 - PGE# 063792 center of span from bucket

Cascade 072

Photo log for Engineer's photos taken regarding: CalFire Wind Complex - Cascade Fire		
82	DSCN9687	lateral to utility pole # 13897B3 - PGE# 063792 center of span from bucket
83	DSCN9688	lateral to utility pole # 13897B3 - PGE# 063792 center of span from bucket
84	DSCN9689	lateral to utility pole # 13897B3 - PGE# 063792 center of span from above in bucket
85	DSCN9690	lateral to utility pole # 13897B3 - PGE# 063792 center of span from bucket
86	DSCN9691	lateral to utility pole # 13897B3 - PGE# 063792 center of span from above in bucket
87	DSCN9692	lateral to utility pole # 13897B3 - PGE# 063792 center of span from above in bucket
88	DSCN9693	water well house
89	DSCN9694	water well house
90	DSCN9695	electrical conduit and water pipe to water well house
91	DSCN9695	electrical conduit and water pipe to water well house
92	DSCN9697	electrical conduit and water pipe to water well house
93	DSCN9698	electrical conduit and water pipe to water well house
94	DSCN9699	water well house
95	DSCN9700	water wellhead
96	DSCN9701	water well pump controls with rodent occupancy
97	DSCN9702	water well pump controls with rodent damage
98	DSCN9702	water well pump controls with rodent occupancy
99	DSCN9703	water well pump controls with rodent occupancy
100	DSCN9704	water well pump controls with rodent occupancy
101	DSCN9705	water well pump controls
102	DSCN9706	water well pump controls
103	DSCN9707	water well pump controls
104	DSCN9708	water wellhead
105	DSCN9709	water wellhead and pressure sensor
106	DSCN9710	water wellhead pressure sensor
107	DSCN9711	water wellhead pressure sensor
108	DSCN9712	water wellhead pressure sensor
109	DSCN9713	water wellhead pressure sensor
110	DSCN9714	water well pump controls
111	DSCN9715	water well pump controls
112	DSCN9716	water well pump controls
113	DSCN9717	water well pump controls
114	DSCN9718	water well pump controls
115	DSCN9719	water well pump controls
116	DSCN9720	water well pump controls with rodent damage
117	DSCN9721	water well house in distance
118	DSCN9722	service entrance meter box remains
119	DSCN9723	conductors from service entrance meter box remains to well house
120	DSCN9724	conductors from service entrance meter box remains to well house
121	DSCN9725	conductors from service entrance meter box remains to well house
122	DSCN9726	service entrance meter box remains

Photo log for Engineer's photos taken regarding: CalFire Wind Complex - Cascade Fire		
123	DSCN9727	conductors & conduit from service entrance meter box remains to well house
124	DSCN9728	electrical remains in debris pile
125	DSCN9729	electrical remains in debris pile
126	DSCN9730	electrical remains in debris pile
127	DSCN9731	electrical remains in debris pile
128	DSCN9732	electrical remains in debris pile
129	DSCN9733	electrical remains in debris pile
130	DSCN9734	service entrance meter box remains
131	DSCN9735	power cord from meter box to trailer
132	DSCN9736	power cord from meter box to trailer
133	DSCN9737	power cord from meter box to trailer
134	DSCN9738	power cord from meter box to trailer
135	DSCN9739	power cord from meter box to trailer
136	DSCN9740	circuit breaker panel from trailer
137	DSCN9741	circuit breaker panel from trailer
138	DSCN9742	accidental photo (deleted)
139	DSCN9743	general location photo
140	DSCN9744	general location photo
141	DSCN9745	general location photo
	End of list	

Cascade 074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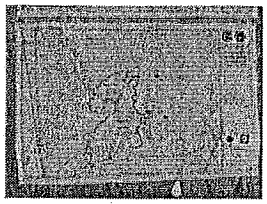
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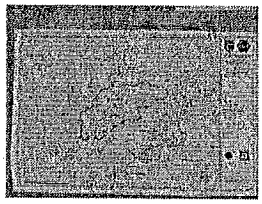
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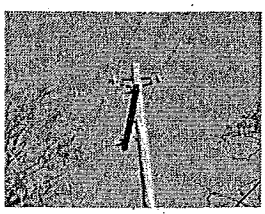
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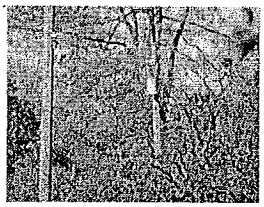
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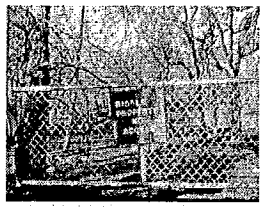
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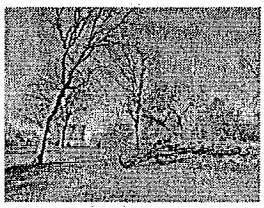
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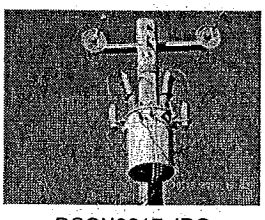
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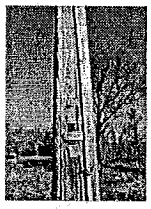
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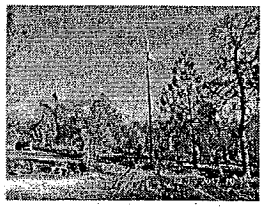
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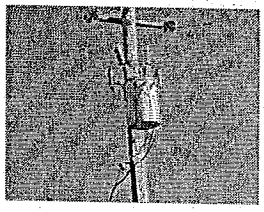
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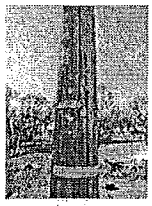
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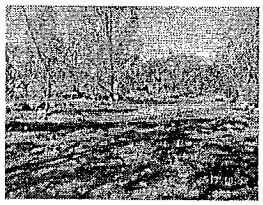
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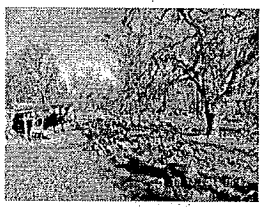
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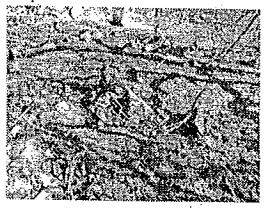
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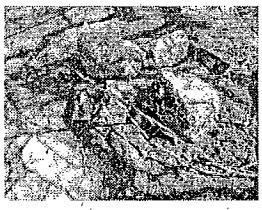
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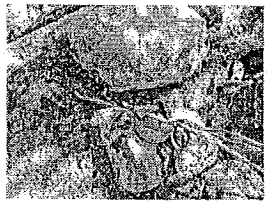
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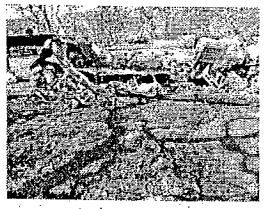
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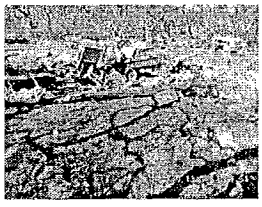
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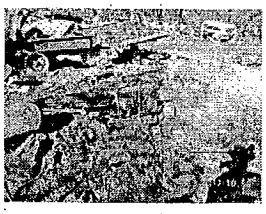
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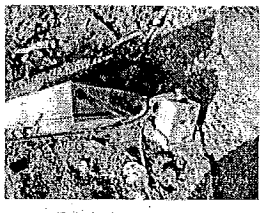
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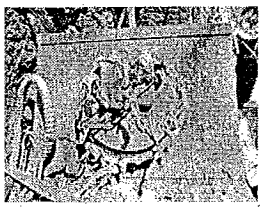
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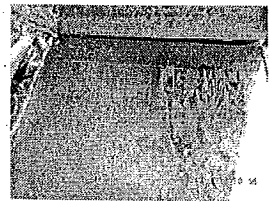
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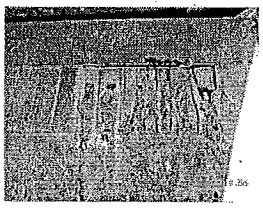
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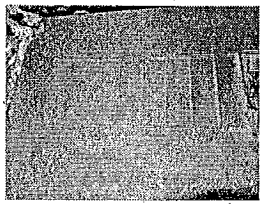
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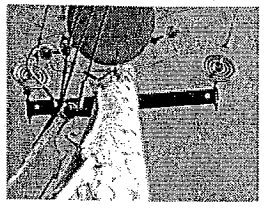
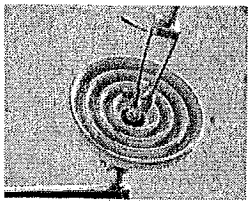

Cascade 075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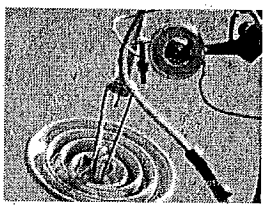
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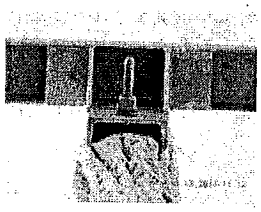
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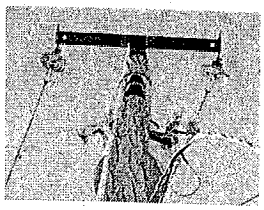
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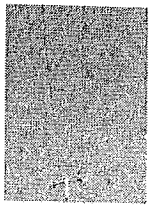
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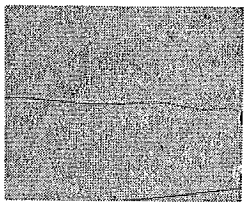
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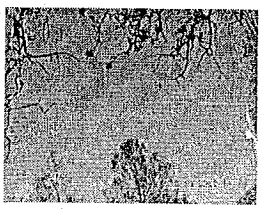
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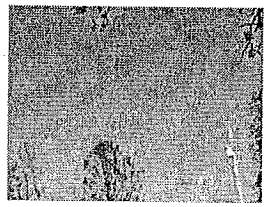
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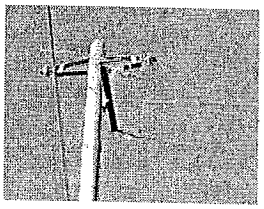
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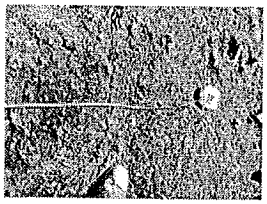
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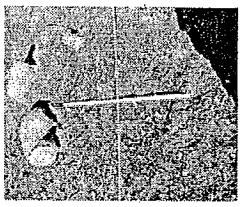
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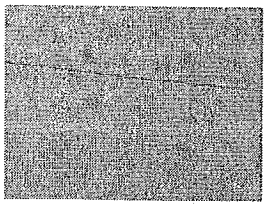
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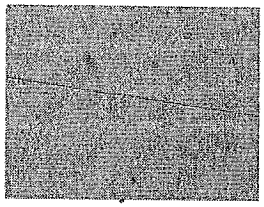
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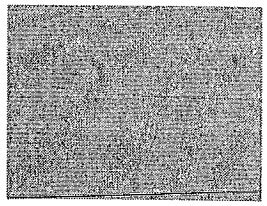
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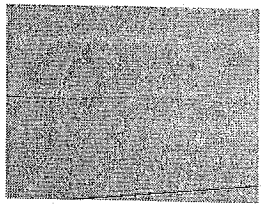
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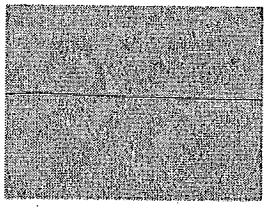
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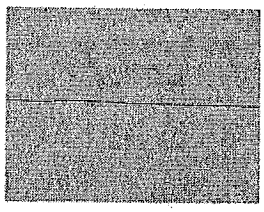
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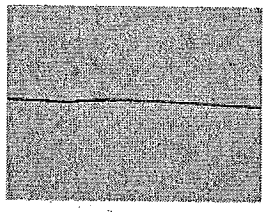
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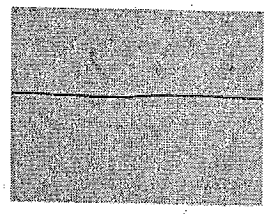
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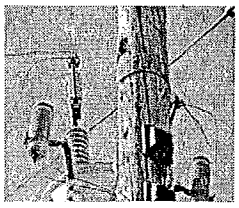
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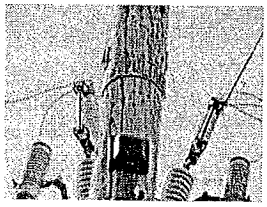
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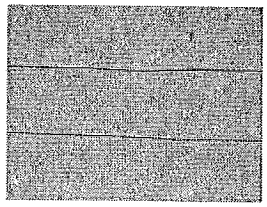
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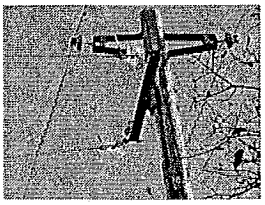
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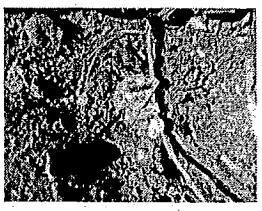
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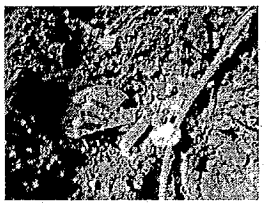
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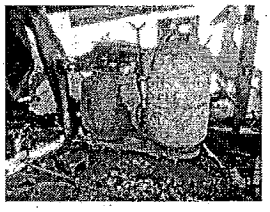
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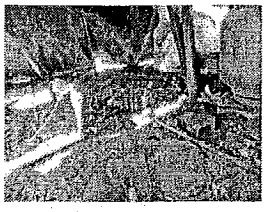
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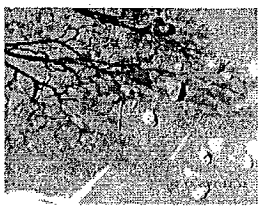
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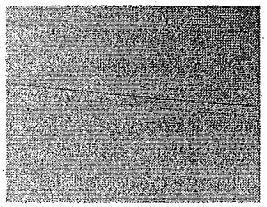
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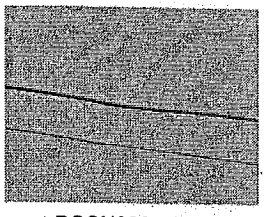
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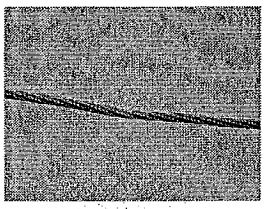
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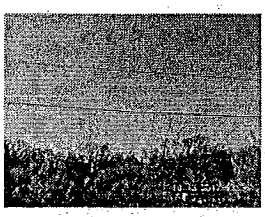
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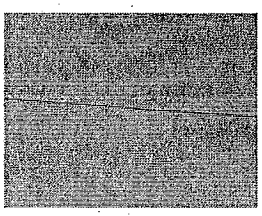
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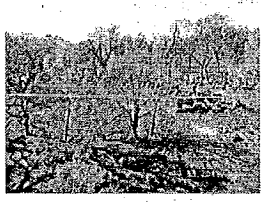
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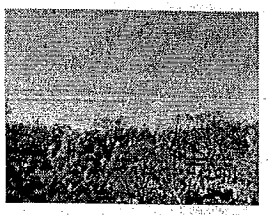
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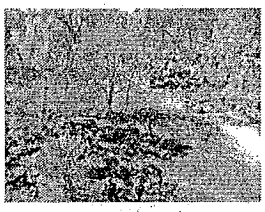
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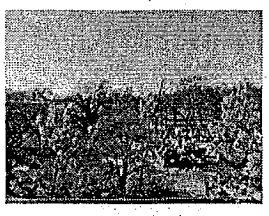
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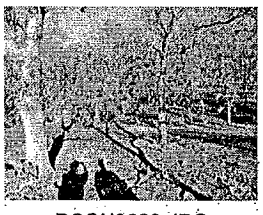
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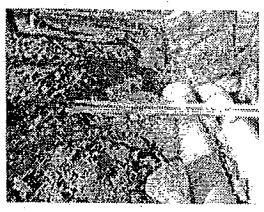
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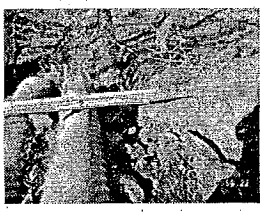
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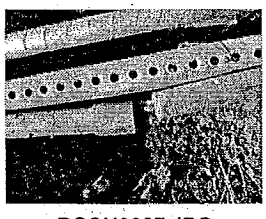
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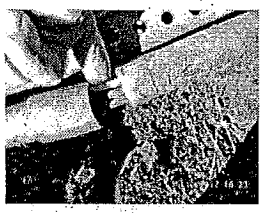
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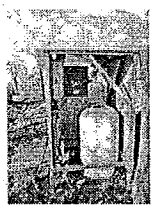
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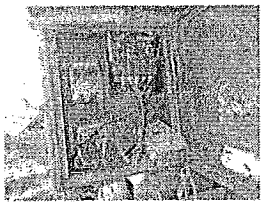
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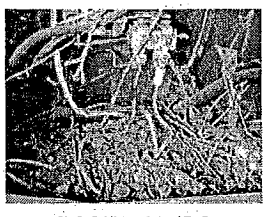
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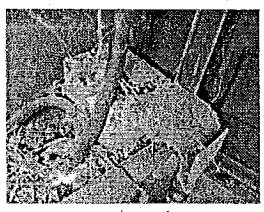
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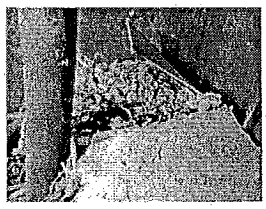
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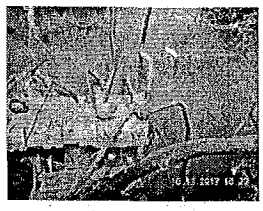
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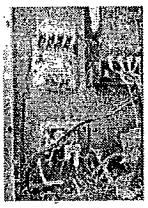
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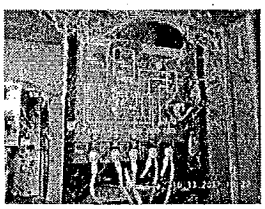
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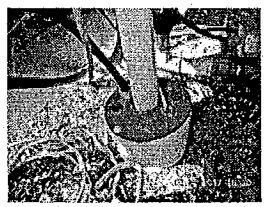
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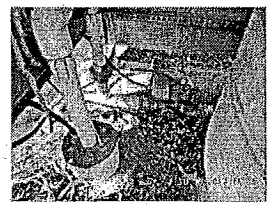
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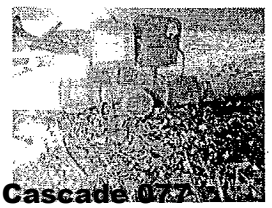

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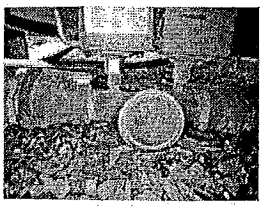
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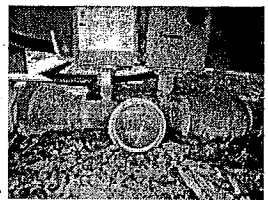
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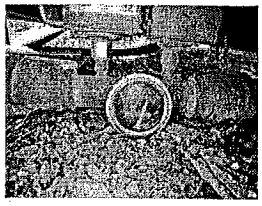
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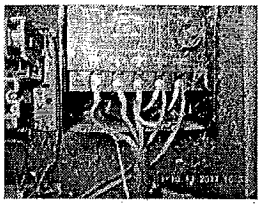
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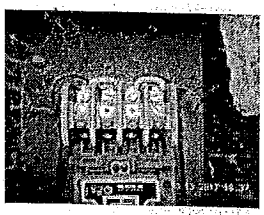
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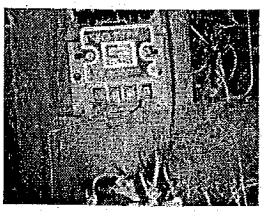
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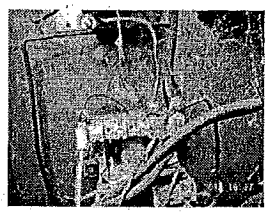
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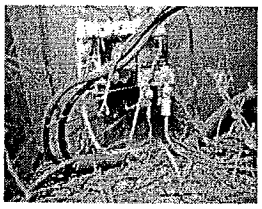
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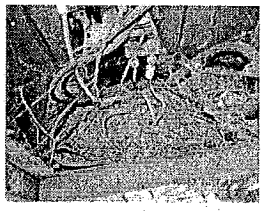
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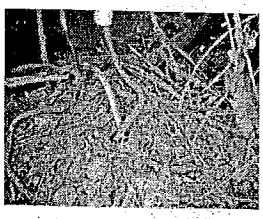
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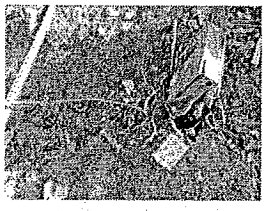
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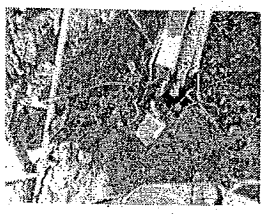
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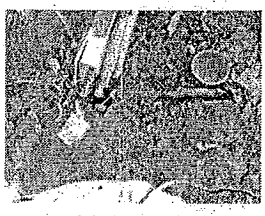
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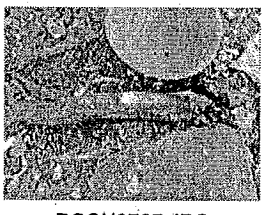
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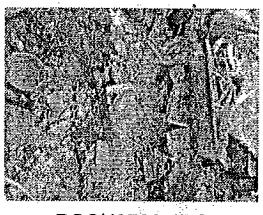
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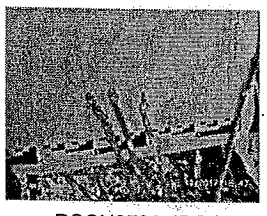
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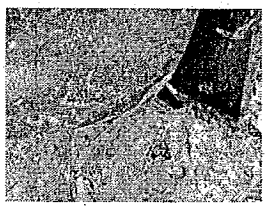
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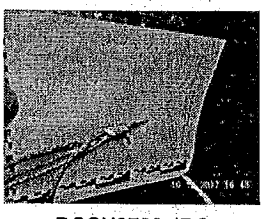
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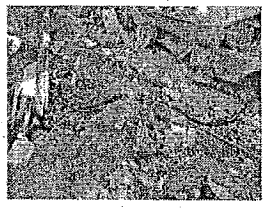
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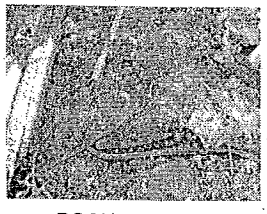
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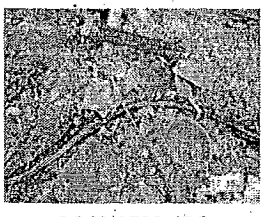
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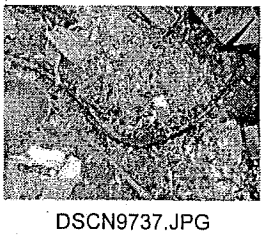
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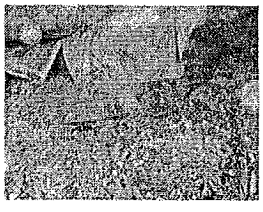
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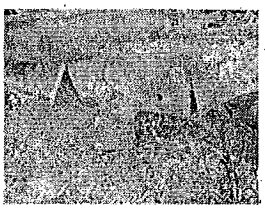
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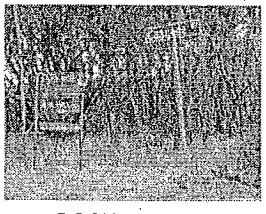
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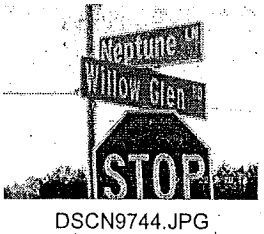


DSCN9744.JPG

DSCN9745.JPG

Cascade 078

ATTACHMENT C

PG&E Cascade Incident Description & Factual Summary

CASCADE INCIDENT DESCRIPTION & FACTUAL SUMMARY

For completeness, this incident description and factual summary should be read in conjunction with the Factual Report Guidance and the contemporaneously submitted response to Question 62.

Background:

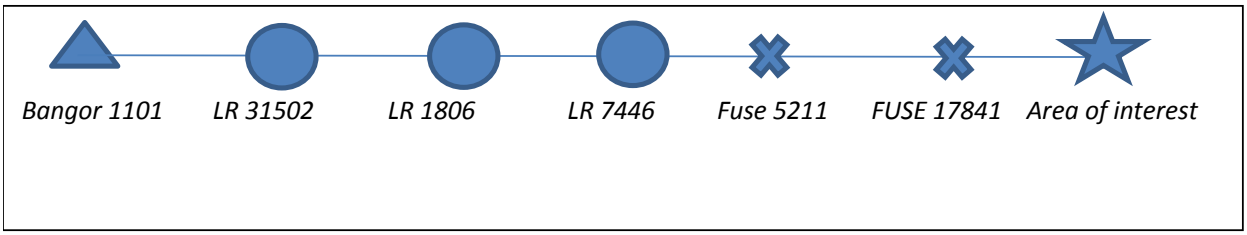
On October 20, 2017, PG&E filed an Electric Safety Incident Report (Incident No. 171020-8591) concerning an incident that occurred near 13916 Cascade Way Browns Valley, Yuba County (the "incident location" as defined by the CPUC's December 7, 2017, letter).

PG&E understands that CAL FIRE took possession of an intact span of primary distribution conductors on the Bangor 1101 (12 kV) Circuit and customer-owned electric equipment, including the customer service panel, at the incident location. The primary conductors were in place and appeared to be in working order at the time that CAL FIRE requested to take possession. The secondary service line appeared to be damaged at mid-span, but there was no apparent damage to other PG&E facilities.

According to CAL FIRE's website, the Cascade fire is part of the Wind Complex Incident, which consists of four different fires: Cascade, La Porte, Lobo, and McCourtney.

According to CAL FIRE's website, the Cascade fire started at 11:03 PM on October 8, 2017.

Incident Overview:



The incident location is served by the Bangor 1101 (12kV) Circuit and is downstream of both Fuse 5211 and Fuse 17841. Per PG&E records, on October 8, 2017, at 10:00 PM, a smart meter at service point 1062306405, located downstream of Fuse 5211, recorded a Zero Volt reading. Per PG&E records, at 10:57 PM, a smart meter at service point 1062299105, located downstream of Fuse 17841, reported a Last Gasp event. Also at 10:57 PM, per PG&E records, 9 of the 13 smart meters downstream of Fuse 17841 recorded a NIC Power Down or Last Gasp event, and 21 of 25 smart meters downstream of Fuse 5211 recorded a NIC Power Down event. Per PG&E records, the Colgate-Palermo 60 kV transmission line feeding the Bangor Substation experienced four momentary outages at 11:08 PM, 11:16 PM, 11:18 PM and 11:20 PM. Per PG&E records, at 11:22 PM, due to a fire impacting the transmission line, the Bangor Substation was automatically de-energized. The de-energization of the substation de-energized the incident location.

Per PG&E records, on October 9, 2017, at 7:30 PM, Line Recloser 31502—the third recloser upstream from the incident location—was opened manually on a dead line. At 7:58 PM, per PG&E records, the Bangor Substation was re-energized, but no customers were restored because Line Recloser 31502 remained open.

According to PG&E records, a troubleman, compliance inspector, and compliance supervisor were the first PG&E responders at the incident location. On October 11, 2017, per PG&E records, the troubleman drove past the incident location between 12:18 and 12:28 PM. The compliance inspector drove by at about the same time or shortly before. The compliance supervisor drove by at about the same time or shortly after. The compliance inspector used binoculars to assess the incident location from the road and did not observe any damage to PG&E facilities. The troubleman, the compliance inspector, and the compliance supervisor did not attempt to access the incident location because of CAL FIRE activity there.

On October 12, 2017, at 12:58 PM, per PG&E records and the same troubleman who had driven by the incident location on October 11, this troubleman reported that he had found 2 of 2 fuses blown at Fuse 5211. At 8:27 PM, per PG&E records, Line Recloser 31502 was remotely closed via SCADA, restoring 49 customers but not the incident location as fuses upstream from the incident location remained open.

On October 13, 2017, at 12:49 PM, per PG&E records, Line Recloser 1806—the second recloser upstream from the incident location—was remotely opened via SCADA as part of the efforts to restore electrical service in the area. At 1:14 PM, per PG&E records, Line Recloser 7446—the first recloser upstream from the incident location—was manually closed on a dead line. Line Recloser 7446 is not SCADA-capable, and PG&E has been unable to determine when it opened. At 1:15 PM, per PG&E records, Line Recloser 1806 was remotely closed via SCADA, restoring 93 customers. While electrically in-line with the incident location, none of the recloser operations on October 13 impacted the incident location because fuses upstream from the incident location remained open. At 7:34 PM, per PG&E records, a troubleman reported Fuse 17841—the first fuse upstream of the incident location—open. The troubleman closed Fuse 5211 at 7:44 PM, per PG&E records, restoring 27 customers. At 8:18 PM, per PG&E records, the troubleman opened the jumpers for 13916 Cascade Way, reporting that there was no service to be restored.

On October 14, 2017 at 8:19 AM, per PG&E records, another troubleman closed Fuse 17841, restoring 9 customers. On October 16, 2017 at 6:18 AM, PG&E updated its operational records to close the outage report because there were no downstream customers to restore at that time.

On October 17, 2017, CAL FIRE requested that a PG&E crew assist with CAL FIRE's evidence collection at the incident location. The primary conductors were in place and appeared to be in working order at the time of CAL FIRE's request to take possession. Later that same day, CAL FIRE released the incident location. PG&E then accessed the incident location and was able to conduct measurements. Based on the measurements, the primary conductor span length had been approximately 100 feet. PG&E also observed that that the secondary service line appeared to be damaged at mid-span, but there was no apparent damage to other PG&E facilities.

Evidence Collection:

At the incident location, CAL FIRE collected an intact span of primary distribution conductors on a tap line serving 13916 Cascade Way, as well as, customer-owned electric equipment, including the customer service panel. The conductors collected by CAL FIRE were #4 AR (Aluminum Conductor, Steel Reinforced) installed in 1980. PG&E does not know whether CAL FIRE collected additional evidence at the incident location.

On October 17, 2017, PG&E collected parallel groove connectors and unblown liquid transformer fuses. On November 10, 2017, PG&E collected a dead-end transformer pole with a cross arm and a transformer.

Timeline:

Cascade		
Event	**CPUC Bates Number Reference**	**CAL FIRE Bates Number Reference**
October 8, 2017, 10:00 PM: Per PG&E records, a smart meter at service point 1062306405, located downstream of Fuse 5211, recorded a Zero Volt reading.		
October 8, 2017, 10:57 PM: Per PG&E records, a smart meter at service point 1062299105, located downstream of Fuse 17841, reported a Last Gasp event. Per PG&E records, 9 of the 13 smart meters downstream of Fuse 17841 recorded a NIC Power Down or Last Gasp event. Per PG&E records, 21 of 25 smart meters downstream of Fuse 5211 recorded a NIC Power Down event.		
October 8, 2017, 11:03 PM: According to CAL FIRE's website, the Cascade fire started.		
October 8, 2017, 11:08 PM: Per PG&E records, Colgate-Palermo 60 kV transmission line feeding Bangor Substation experienced a momentary outage.	PGE-CPUC_00013569	PGE-CF_00136584
October 8, 2017, 11:16 PM: Per PG&E records, Colgate-Palermo 60 kV transmission line feeding Bangor Substation experienced a momentary outage.	PGE-CPUC_00013569	PGE-CF_00136584
October 8, 2017, 11:18 PM: Per PG&E records, Colgate-Palermo 60 kV transmission line feeding Bangor Substation experienced a momentary outage.	PGE-CPUC_00013569	PGE-CF_00136584

Cascade		
Event	**CPUC Bates Number Reference**	**CAL FIRE Bates Number Reference**
October 8, 2017, 11:20 PM: Per PG&E records, Colgate-Palermo 60 kV transmission line feeding Bangor Substation experienced a momentary outage.	PGE-CPUC_00013569	PGE-CF_00136584
October 8, 2017, 11:22 PM: Per PG&E records, due to a fire impacting the transmission line, the Bangor Substation was automatically de-energized, de-energizing the Bangor 1101 Circuit and the incident location.	PGE-CPUC_00013769, at 770	PGE-CF_00136611, at 612
October 9, 2017, 7:30 PM: Per PG&E records, Line Recloser 31502 was manually opened on a dead line.	PGE-CPUC_00013769, at 770	PGE-CF_00136611, at 612
October 9, 2017, 7:58 PM: Per PG&E records, Bangor Substation was re-energized.	PGE-CPUC_00013769, at 770	PGE-CF_00136611, at 612
October 11, 2017, 12:18-12:28 PM: Per PG&E records, a troubleman drove past the incident location between. A compliance inspector and compliance supervisor stated that they drove by at about the same time or shortly before. The troubleman, compliance inspector, compliance supervisor stated they did not attempt to access the incident location due to CAL FIRE activity there.		
October 12, 2017, 12:58 PM: Per PG&E records and the same troubleman who had driven past the incident location on October 11, the troubleman reported finding 2 of 2 fuses blown at Fuse 5211.	PGE-CPUC_00013670	PGE-CF_00136645
October 12, 2017, 8:27 PM: Per PG&E records, Line Recloser 31502 was remotely closed via SCADA.	PGE-CPUC_00013769, at 770	PGE-CF_00136611, at 612
October 13, 2017, 12:49 PM: Per PG&E records, Line Recloser 1806 was remotely opened via SCADA.	PGE-CPUC_00013542, at 542	PGE-CF_00136571, at 571
October 13, 2017, 1:14 PM: Per PG&E records, Line Recloser 7446 was manually closed on a dead line.	PGE-CPUC_00013542, at 542	PGE-CF_00136571, at 571
October 13, 2017, 1:15 PM: Per PG&E records, Line Recloser 1806 was remotely closed via SCADA.	PGE-CPUC_00013542 at 542	PGE-CF_00136571, at 571

Cascade		
Event	**CPUC Bates Number Reference**	**CAL FIRE Bates Number Reference**
October 13, 2017, 7:34 PM: Per PG&E records, a troubleman reported Fuse 17841 open.	PGE-CPUC_00013552	PGE-CF_00136578
October 13, 2017, 7:44 PM: Per PG&E records, a troubleman closed Fuse 5211.	PGE-CPUC_00013670	PGE-CF_00136645
October 13, 2017, 8:18 PM: Per PG&E records, a troubleman opened the jumpers for 13916 Cascade Way.	PGE-CPUC_00013712	PGE-CF_00136666
October 14, 2017, 8:19 AM: Per PG&E records, a troubleman closed Fuse 17841.	PGE-CPUC_00013552	PGE-CF_00136578
October 16, 2017, 6:18 AM: Per PG&E records, PG&E updated its operational records to close the outage report because there were no downstream customers to restore at that time.	PGE-CPUC_00013712	PGE-CF_00136666
October 17, 2017: CAL FIRE released the incident location, and PG&E first accessed the incident location.		

Source List:

Source	Brief Description
PGE-CPUC_00017161	Log of Evidence PG&E Collected (amended response)
PGE-CPUC_00012216	Log of Evidence Collected by CAL FIRE (amended response)
PGE-CPUC_00013542	ILIS Outage Report 17-0085751
PGE-CPUC_00013552	ILIS Outage Report 17-0087244
PGE-CPUC_00013569	ILIS Outage Report 17-0085270
PGE-CPUC_00013670	ILIS Outage Report 17-0086754
PGE-CPUC_00013712	ILIS Outage Report 17-0087249
PGE-CPUC_00013769	ILIS Outage Report 17-0085381
PGE-CPUC_00013776	Bangor 1101 Circuit Map produced in response to CPUC Q27.
Cascade Initial Electrical Incident Report	10/20/2017 Initial Electrical Incident Report http://cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/USRB_FW_%20Electric%20Safety%20Incident%20Reported-%20PGE%20Incident%20No_%20%20171020-8591.pdf
Cascade Electrical Safety Incident Report	11/17/2017 20-Day Electrical Safety Incident Report (171020-8591)
Response to Question 35	12/29/2017 Response to CPUC's October 2017 Wildfire Data Request
Response to Question 36	12/29/2017 Response to CPUC's October 2017 Wildfire Data Request
CAL FIRE Website	"Cascade (Wind Complex) Incident Information" http://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=1871 (last updated Feb. 9, 2018).
AMI Smart Meter data	AMI Smart Meter data

Factual Report Guidance:

PG&E is providing Incident Description and Factual Summaries (the "Reports") for each incident location, as defined by the CPUC's December 7, 2017, letter. In addition to Question 62, these Reports provide a complete response to Question 1. These Reports also provide a partial response to Question 54. Documents and attachments responsive to Question 54 are being produced with that response.

PG&E's review and collection of records are ongoing, and these Reports are based on information that PG&E believes may be relevant to the incident location, as defined by the CPUC's December 7, 2017, letter, based on information currently known. In preparing these Reports, PG&E has not included data or information that may not be relevant to the incident location, as defined by the CPUC's December 7, 2017, based on information currently known, for example:

- Transmission-level outages, which because of their wide-spread impact, may have caused an outage at the incident location, unless the source of the outage appears to have been related to the incident location or the transmission-level outage de-energized the incident location; or
- Certain minor alarms sent by protection devices that did not result in a sustained outage at the incident location.

Raw data has, however, been provided in response to other questions.

PG&E has not reviewed potentially relevant information that is in the possession of CAL FIRE or any other entity. The causes of the incidents are still under investigation and it is premature to draw conclusions about whether the "fire locations" or "incident locations" addressed by these Reports are points of origin.

Moreover, PG&E has relied on some publicly available information provided by third parties, such as CAL FIRE. For example, PG&E has relied on the start times designated by CAL FIRE as indicated in PG&E's response to Question 25, submitted to the CPUC on January 31, 2018, in generating these Reports. PG&E is not presently able to validate this information.

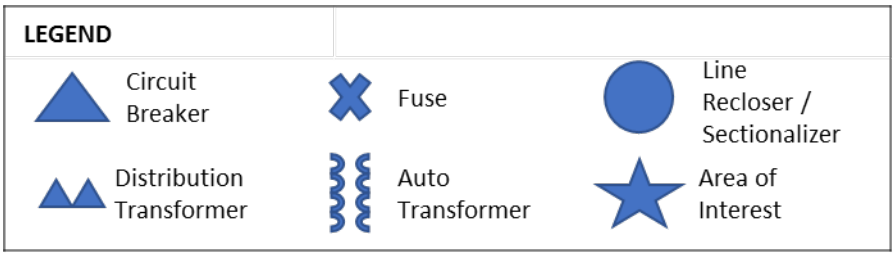
For these reasons, among others, the facts described in the Reports may or may not be relevant to questions of causation or origin with respect to any incidents, and there may also be other facts not in the Reports that are relevant to questions of causation or origin of any incidents.

In addition, please find a list of additional explanations related to particular points.

Single Line Diagrams

For ease of reference, PG&E has included reproductions of the single line diagrams produced in response to Question 28, submitted to the CPUC on December 29, 2017.. Any reference to "area of interest" in the single line diagrams refers to the incident location, as defined by the CPUC's December 7, 2017, letter. The single line diagrams show the incident location and the location of all protection devices upstream of the incident location back to the distribution circuit breaker at the substation. Smart Meters, switches, and any devices downstream of incident locations are not shown on the single line diagrams, although they may be referenced in the Reports.

Below please find a legend that explains the symbols used in the diagrams.



First Responders

As indicated above, in response to Question 54, PG&E has included in its Reports an account of the first PG&E employee who attempted to access the incident location before the CPUC's site visit with PG&E to the incident location, as defined by the CPUC's December 7, 2017, letter.

Repair and/or Restoration Work

PG&E has included information related to when repair and/or restoration work was completed. PG&E has not attempted to include all dates on which repair crews were present at or near incident locations, as defined by the CPUC's December 7, 2017, letter, either in the incident overview or the timeline.

Timeline

As indicated above, in response to Question 1, PG&E has included a timeline of certain equipment operations and actions of PG&E employees at or near the incident locations, including during the period 12 hours prior to CAL FIRE's designated start time, as indicated in PG&E's response to Question 25, until the date (if known) when CAL FIRE obtained PG&E facilities for evidence, CAL FIRE released the incident scene, or repair and/or restoration work was completed, whichever event came last. PG&E has not included every possible data point during the timeline time period. Rather, as indicated above, the timelines include information that PG&E believes may be relevant to the incident location, as defined by the CPUC's December 7, 2017, letter, based on information currently known. Where records have been produced, PG&E provided the Bates number. Within a single row, some information may be based on records that have been produced, while other information may be based on records or other information that have not been produced.

Operational Data

PG&E has relied on certain operational data sets (*e.g.*, SCADA, AMI) in preparing these Reports. There may be data discrepancies between different operational data sources. For example, timestamps of a common event across different operational data sources may differ. In these Reports, PG&E has documented to the best of its ability the most accurate occurrence time based on its current understanding.

SCADA Data

SCADA (Supervisory Control And Data Acquisition) data includes alarm and event data remotely collected in real time from data-collection capable devices on PG&E's electric distribution and transmission circuits. Reclosers and circuit breakers are examples of devices that may report SCADA data. Fuses do not have SCADA connectivity and, therefore, do not report SCADA data. SCADA alarms and events memorialize electrical events on a circuit. However, they are associated with the device that collected them and do not include information on the specific cause or precise origin location of the electrical event that they memorialize.

As noted above, PG&E has not included all SCADA events in the Incident Overview or the Timeline. For example, Minimum To Trip ("MTT") alarms have not been included. MTT alarms are generated when a SCADA-enabled device identifies a circuit load that exceeds a maximum threshold load but for less than a certain amount of time. MTT alarms can be frequent and do not include information on the specific cause or origin location of the event that triggered them. A record of all SCADA events and alarms that occurred during the requested time periods has been previously produced in response to Question 25, submitted to the CPUC on January 31, 2018, in the Bates range PGE-CPUC_00007875-7911.

AMI Data

Smart Meters are electric meters designed to record customer electricity usage, primarily for billing purposes. They can record and transmit electrical data including usage, voltage and event data ("Smart Meter" or "AMI" data). In certain situations, data collected by these meters may be helpful to determine information about outages. For example, a Smart Meter's "last gasp" is an event that may show the time at which a specific Smart Meter lost power. In conjunction with data from other Smart Meters, "last gasp" data might indicate when a certain location on the electric grid lost power or some other secondary problem. A "NIC power down" is a recorded log event when a Smart Meter initiates a shut down. A "zero volt reading" occurs when a meter is partially energized (between 25% and 75%) at the time of a reading. Each of these readings will only occur if the communication from the Smart Meter is successfully received (or subsequently retrieved and downloaded if the Smart Meter is still accessible).

As noted above, PG&E has not included all AMI events in the Incident Overview or the Timeline. For example, sag or swell events have not been included. Smart Meters record these events when they detect a decrease (sag) or increase (swell) in voltage above or below a certain threshold for more than a certain period of time. Sag and swell events do not have specific timestamps; the data indicates only that they occurred during a certain time interval. Sag and swell events may indicate unusual activity; however, they do not indicate the location of that unusual activity. Smart Meter data was not requested in the November 21, 2017, Data Requests and has not been produced in response to those Data Requests.

<u>Reclosing Device Operations</u>

PG&E is providing certain times at which reclosing devices "operated" (opened or closed), which could include multiple operations depending on the device's settings before the device ultimately stayed closed or stayed open.

Outage Records

PG&E has relied on certain information from its Integrated Logging Information System Operations Database ("ILIS") in preparing these Reports. As explained in response to Question 27, submitted to the CPUC on March 30, 2018, ILIS is PG&E's system of record for distribution transformer-level and above outages. ILIS is the application used by the distribution system operators to document information pertinent to the operation of the electric system. Due to the nature of how information is documented in the application, there may be discrepancies in outage start times and other information between ILIS and other data sources. For example, ILIS does not record single-customer or service-level outages, in accordance with CPUC Decision 96-09-045 and Advice Letter 3812-E on outage reporting requirements. Data from these ILIS records should be reviewed and considered together and in conjunction with those other data sources.

Outage cause information in ILIS is preliminary and is based on the best available information at the time, from initial field intelligence and through spot check quality reviews.

Smart Meter Service Point ID Numbers

Some PG&E records identify Smart Meters by their associated Service Point ID number ("SP_ID"), while other records identify Smart Meters by their associated "Badge" numbers. For consistency, all Reports use SP_ID to identify Smart Meters. PG&E will provide a translation between SP_ID and Badge numbers upon request.

Source List

At the end of each Report, PG&E has included a list of records on which it relied in drafting each Report. When PG&E indicates in a Report that information is per PG&E records, PG&E is referring to the records identified at the end of the Report. Where records have been produced, PG&E provided the Bates number. In addition to the items on the source list, PG&E relied on a variety of internal databases to make an assessment of location information regarding devices and individuals (*e.g.*, GIS, GPS) and observations made by PG&E employees including the first PG&E employee who attempted to access the incident location before the CPUC's site visit with PG&E to the incident location.